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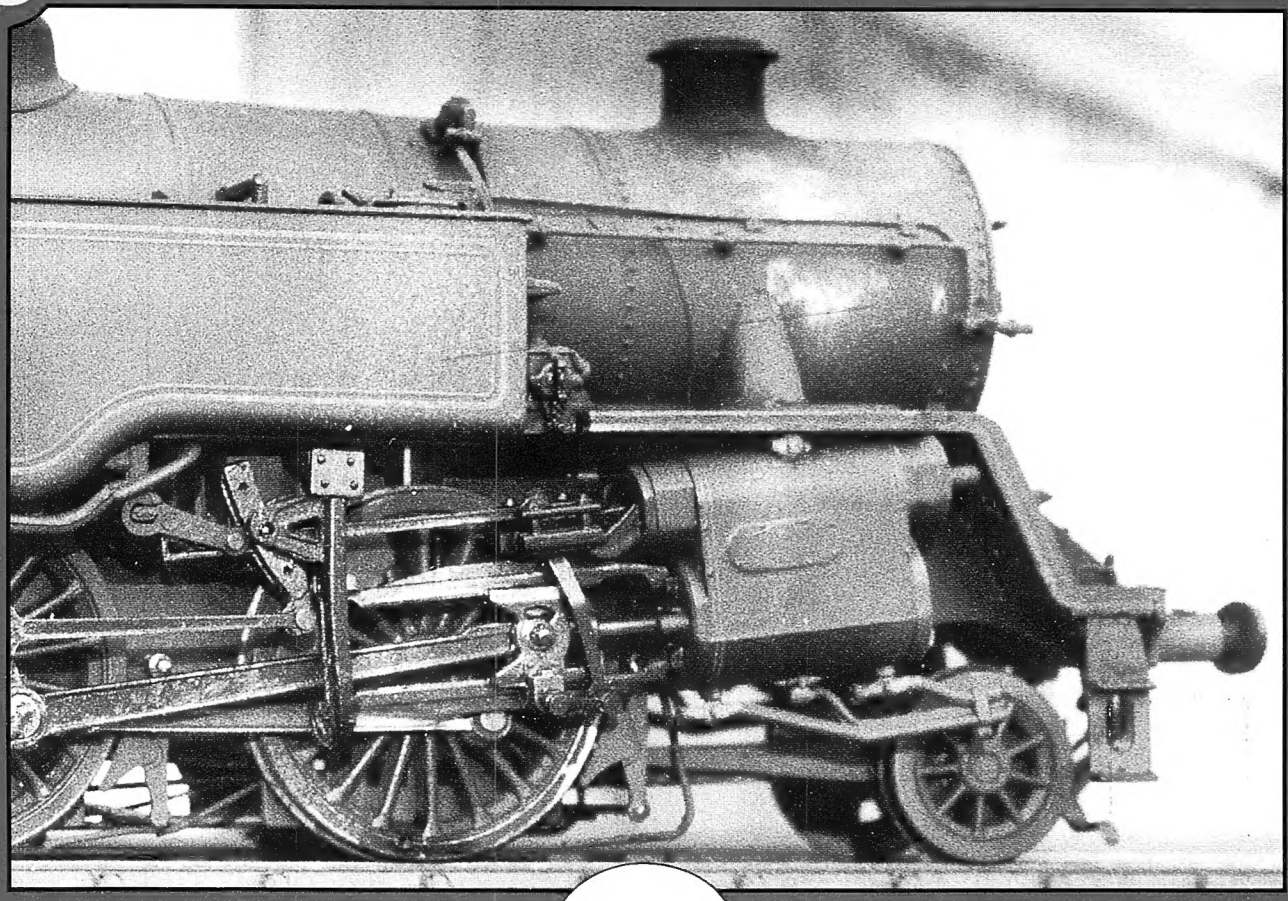

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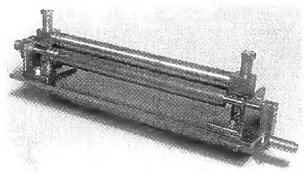

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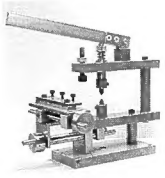

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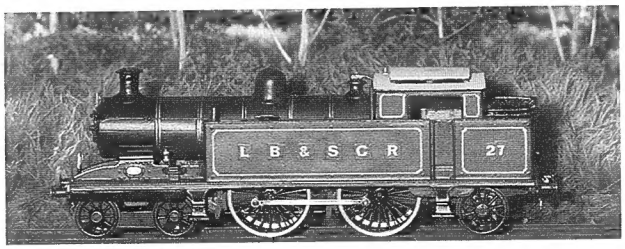

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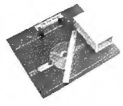

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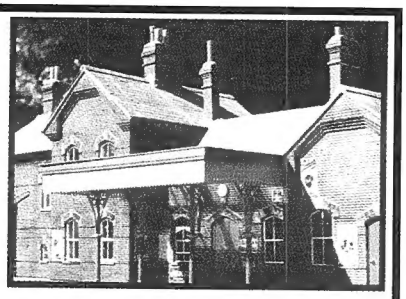

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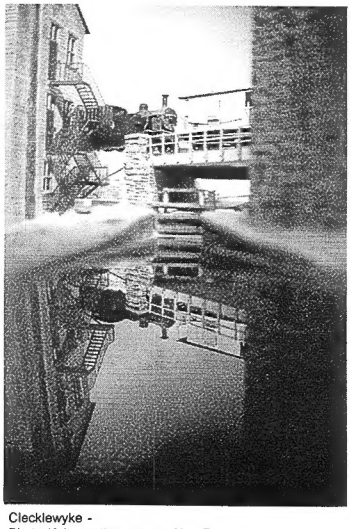

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The Metropolitan Railway served a sizeable area of countryside to the north-west of London, extending out into the depths of Buckinghamshire. As a result, it developed not only passenger services, both suburban and long-distance, but also a thriving goods traffic, for which it developed a wide range of wagons. This study charts the development of the Metropolitan's rolling stock from its beginnings in 1863, through to its absorption into the London Passenger Transport Board in 1933, when, swamped by the interests of the Underground group, its independent character was effectively stifled. It was not long before its non-passenger interests were handed over, along with much of the freight stock and the locomotive fleet, to the control of the London & North Eastern Railway, with whom, as successors to the Great Central Railway, the Metropolitan co-existed.

176 pages. Laminated card cover. ISBN 1 874103 66 6. £19.95

IN SEARCH OF A DREAM: THE LIFE AND WORK OF ROYE ENGLAND

Edited by Stephen Williams

This book tells the story of the life and work of a remarkable man whose ambition was to capture a portrait of 1930s rural England that was fast disappearing and to preserve it in miniature form – in a model village of hitherto unimagined accuracy and detail, complete within a landscape of fields and woodlands and with a representation of the main line of the GWR running through the scene. The inspiration for this dream-like project was the once-beautiful Vale of White Horse, which Roye first visited soon after his arrival in England in 1925, and which he subsequently made both his physical and spiritual home. Out of this enterprise grew the world-famous Pendon Museum of Miniature Landscape and Transport that Roye established at Long Wittenham, Oxfordshire, from 1954. The story, which is semi-autobiographical, is not a history of Pendon *per se*. The book also presents one man's reflections upon the changing world in which he lived; of the despoilation of the countryside (as Roye saw it) in the name of 'progress'; of the heyday of steam railways and the eventual demise of steam-hauled services; of greater matters too.

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by Gerry Beale

One of the most distinctive features of the Wessex railway scene was the Weymouth Harbour Tramway. Connecting Weymouth station with the quay to serve the Channel Island steamers, the line ran through the streets of the town and along the waterside, thus giving it a quite unique character. Although there were harbourside lines elsewhere, Weymouth was the only place in Britain where full-length trains of mainline corridor stock worked along public thoroughfares, competing with the regular road traffic for space in the congested streets. This account provides an outline history of the line, details of the locos which worked it and the steamers it served. However, the main part of the book is a pictorial journey along its fascinating route through the streets.

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NARROW GAUGE RAILWAY MODELLING

by Peter Kazer

After thirty years of narrow gauge modelling, Peter Kazer has kindly agreed to write about the methods and techniques he has so successfully employed in various scales across a variety of prototypes. It all started in an attempt to demonstrate that narrow gauge modelling should be taken seriously and his crusade has resulted in some wonderful layouts which feature in this volume. He hopes to inspire others to have a go at scratchbuilding and guides the reader logically through prototypes, survey work, presentation, planning, baseboards, trackwork, bridges, buildings, signalling, scenery, locos and rolling stock.

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by Peter Boswell & R. J. Essery

Frank Raymond Williams (Ray to his friends) was an active railway photographer from 1935 until the outbreak of the Second World War. He largely concentrated on moving trains and loco portraits and this album provides an evocative high-quality record of what he saw primarily on the Western and Midland Divisions of the LMS.

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'Mind the doors...'

My last editorial prompted a fairly swift e-mail response from long-term railway employee Mike Bennett who quite rightly expressed concern at two blokes apparently trespassing upon railway land. I was able to reassure him that the bushes we poked our way through were on the road side of the railway fence and that we observed the passing of trains from up against the steel safety barriers mounted on the brick base of an old signal box. We were quite close to the running lines, but not on the railway-owned side of the fence and thus not placing the train crews or ouselves in any jeopardy.

And touching upon e-mails, may I ask that folk sending letters for publication also include their town and county locations, since we like to include these at the end of each letter published. This helps us appreciate not only how far afield you scatter yourselves, but, more importantly, roughly where to send 'da boys' if you get too carried away . . .

Following on the theme of my last ramblings, elsewhere in this issue you will find a short reminiscence from Allan Sibley concerning his own memories of a particularly striking experience on the London Underground. These occasions really do stay with us for years after and I wonder if other readers recall similar moments in time that have become equally imprinted upon their memories – perhaps you would let us know.

Now you're going to think I'm daft, but I have to confess my last trip on the Tube was disappointing, for the platforms and trains were spotlessly clean, the air was conditioned and the rails were of the welded variety. What's wrong with that, you say? Well, I really miss the old bright red stock, with its mahogany interiors and green moquette upholstery, bursting into the stations preceded by a blast of warm fetid air that smelled suspiciously like toilet rolls and which swept before it an assortment of newspapers, fag packets and copious quantities of 'fluff'. Then came the satisfying rumble and whine as the doors opened and closed before we seemed to hurtle into the black tunnels at supersonic speeds (I gather they never actually exceed 35 mph) and the rattle and clatter over the old bullhead rails added to the clamour and noise, before we arrived at our intended station. You had to keep an eye on the overhead maps and passing stations to make sure you were either heading in the right direction or that you hadn't missed your stop entirely.

Nowadays a robotic female voice tells you precisely where you are, where you're going and what station comes up next. She even tells you when to change for other lines or destinations. Where's the fun in that? An essential part of the great adventure was discovering yourself arriving at Ealing Broadway when you were supposed to be at Wimbledon Common and working out which platform you needed to run for, in order to catch the correct train on the District, Bakerloo or Piccadilly Line – names that still carry their own magic for this sad soul.

Of course life's much simpler now, and undeniably better for having such comfortable and sanitized trains with their idiot-proof announcements that guarantee a successful and relaxed journey, but I'd still rather have it the way it was. Which is probably why I'll never produce a layout based upon modern, squeaky clean and ever-so-hygienic trains. The character and atmosphere's gone and I somehow don't have the heart for it.

Martyn Welch
E-mail: mrjedit@aol.com

MODEL RAILWAY JOURNAL

Edited by Martyn Welch. Designed by Paul Karau.

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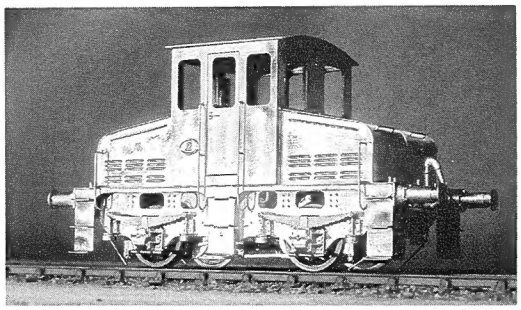
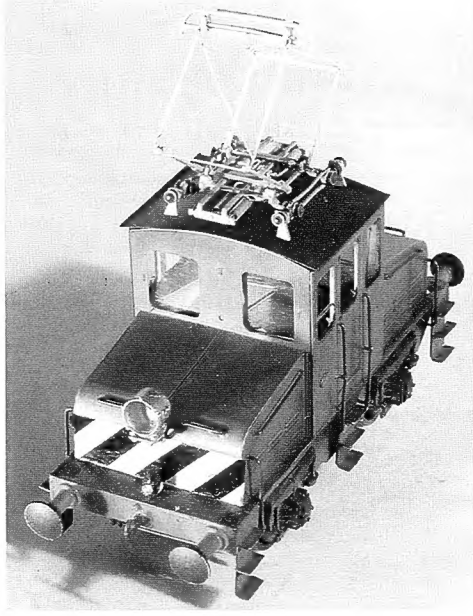
SMALL SUPPLIER FORUM





TRADE GRAPEVINE

HIGH LEVEL KITS have brought out what is believed to be the first-ever commercial 4mm model of a battery electric locomotive. This particular prototype was designed and built by the Lancashire & Yorkshire Railway, but is typical of many 'steeple cab' engines produced by private makers between 1900 and 1940. Cheap to build and economical to operate, battery locomotives found favour with a wide range of industries and public utilities. Complete with jigs for forming the elegant handrails, this etched kit comes with its own bespoke mechanism featuring four-wheel drive, designed-in compensation and twin 97:1 gearboxes, as well as the usual comprehensive instructions, prototype notes and exploded-view diagrams. Equally suitable for P4/EM/00, all that's needed to complete this unusual and undeniably attractive model are a Mashima 1220 motor and 12mm diameter wagon wheels. The model can easily be adapted into an overhead electric locomotive, for which High Level can supply dummy pantographs, and a 7mm scale version is planned later this year to launch their new Level 7 venture. The battery electric kit costs £65 from: 14 Tudor Road, Chester-le-Street, Co. Durham, DH3 3RY. Add £1.50 postage per kit.

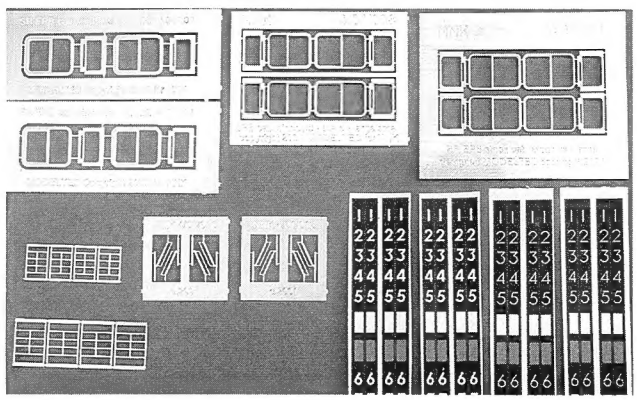
As a spin-off from the growing number of EMUs in his NO NONSENSE KITS range, Alistair Rolfe is offering some useful detailing parts for the Southern Electric modeller. Pack 00/006 is the Bulleid-style driver's side window frames and quarter lights for EPB stock, dimensionally tweaked so they fit MTK/DC Kits models. 00/008 is the same thing but to scale, suited to Southern Pride kits. 00/011 has the larger driver's windows for later EP stock such as 4-VEP, CIG, REP and TC – again etched to scale. 00/014 contains etched security grilles for the inward-opening guard's doors on SR units; 00/015 is the larger type of grille used on outward-opening doors and most van windows. All these packs provide sufficient parts for two vehicles. Pack 00/016 contains finely etched windscreen wipers for EPB stock – four each of left and right-hand pattern. Finally, we have computer-generated Southern-style EMU and loco headcode blinds for the period 1960–present. HC02 is the bold face, HC03 the finer version, and both sets include blanking plates. The headcode packs are £1.00 each, the etched detail packs £1.50, postage 10% of total value of order (minimum £2.00). For more details contact No Nonsense Kits at: PO Box 109, Cardiff, CF23 7YB (029 2031 7212) or E-mail: *no.nonsense.kits@ntlworld.com*. NNK's website: *www.nnkits.co.uk* should be up and running by the time you read this.

Another 'now why didn't I think of that' solution from FORMIL MODEL ENGINEERING – easy-to-assemble non-powered bogies for Lima diesel locomotives, with simple designed-in compensation to improve track holding and current pickup. BU3760 is an etched kit for a three-axle 6ft 9in + 6ft 9in wheelbase inner bogie frame locating inside the cosmetic sideframe mouldings of Lima's class 31, 37, 47 and 60. BU5966 follows the same design, but with the distinctive asymmetrical wheelbase of General Motors classes 59 and 66. Although designed primarily for 16.5mm gauge, these trailing bogies are readily adaptable to EM and P4. BU3760 costs £15.75 (or two for just £13.50 each), BU5966 is £16.25 or £14.00 each for two or more, which includes postage and Formil's characteristically thorough instructions. Formil are at: 12 Oak Tree Close, Bedale, North Yorkshire, DL8 1UG. For more details, E-mail: *formil@clara.co.uk* or call 01677 424686.

Whilst looking for ways of creating slated model roofs in 7mm without the occasional scale thickness slates curling up, KEN RICKETTS decided the best way to overcome the problem was to produce some etched strips of slates to his own design. Intended to simplify the laying of a good-looking and accurate model roof, the sample provided is correct for 7mm scale Countess (20in x 10in) slates with a 3in headlap. The half-etched overlaps at the lower edges give the visible edges a thickness of 0.005in – just about right for good quality slates in this scale. On each fret there are four types of strip: 1. Top/middle row, full slate at each end. 2. Top/middle row, half slate at each end. 3. Bottom row, full slate at each end. 4. Bottom row, half slate at each end. The bottom row slates don't have a half-etched area along the underside of their lower edges. The slates are not full size – most of the part of each one that is overlapped by the next row above is omitted in order to get the maximum possible coverage. This is the only version produced so far, but if there is sufficient interest, the range will be extended to provide a variety of other sizes and styles, such as the decorative round or pointed slates seen on some roofs. This first sheet (590X495/A) contains sufficient strips to cover an area of about 4cm x 10cm and costs £4.50 per fret, £16 for four, £30 for eight – including P & P (cheques only, payable to K. A. Ricketts) from: East Berks Light Railway, 30 Benning Way, Wokingham, RG40 1XX. E-mail: *kenricketts@waitrose.com*

After the Ruston 165 reviewd in MRJ No. 131 comes another early diesel from the fast-growing range of JUDITH EDGE KITS. This time it's the 204bhp jackshaft-driven Barclay 0–6–0, a standard industrial design of which ten were supplied to British Railways. Delivered in 1956 and numbered 11177-86 (later D2440-D2440-9), they survived until 1969. The specification is similar to the Ruston – etched bodywork and chassis, cast resin details, good instructions. As soon as we've assembled our review sample, we'll show you what it looks like. Excluding wheels, gears and motor (you'll also need to supply your own sprung buffers) the kit costs £38 + £1 post and packing from Judith Edge Kits at: 5 Chapel Lane, Carlton, Barnsley, S71 3LE (01226 722309 or E-mail *EdgeMD@aol.com*). This interesting range is also available from DC Kits' exhibition stand.

The SOUTH HANTS MODEL RAILWAY CLUB has designed a jig to enable components for common crossing parts to be accurately produced and assembled. The jig allows for the production of 1 in 5, 6, 7 and 8 crossings using code 75 rail and is therefore suitable for turnout construction in EM, S4 and finescale OO. Being casehardened, it is used for accurately filing the crossing vees, clamping the vee rails correctly for soldering, and for bending the wing rails. In order for the club to be able to produce this jig for sale to its own members at a reasonable cost, it needs to know that it is likely to sell at least fifty in total to spread the set-up costs. The jig is expected to retail at £15 and if anyone might be interested in purchasing one, then contact David Hawkins by post at: 45 St. David's Road, Southsea, Hants, PO5 1QJ, or E-mail: *dave@45stdavids.freeserve.co.uk*



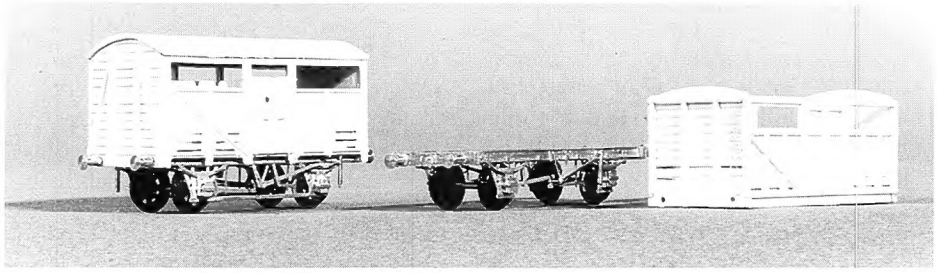
No Nonsense Kits EMU bits.

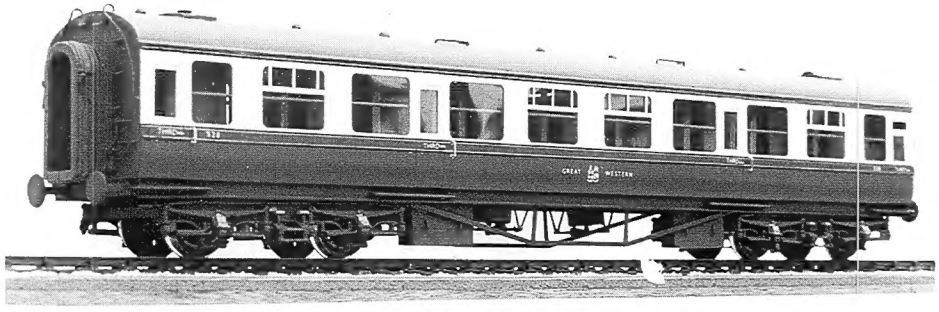
The 2MM SCALE ASSOCIATION has introduced to its members a very fine etched sheet for two 11ft wheelbase underframes suitable for their plastic BR and LMS Cattle Wagon body kits. The etch features axle boxes and springs and aside from the plastic body kits, you will need wheels, top hat bearings and turned brass buffers to complete two very smart wagons. The BR Cattle Wagon body and the underframe etch are new products commissioned by the Association from Cambrian and Fencehouses Model Foundry respectively. The LMS body isn't new but the old Precursor Models product, the tools for which are now owned by the Association, and future supplies will only be available from them. The etch costs £1.70 with the cattle wagon bodies priced at £1.95 each. Spoked or 3-hole disc 6mm wagon wheels cost 50p per axle and brass buffers come in at 55p for four, so a cattle wagon of either type will set you back around £4.70. Other recent arrivals are a plastic wagon body kit for a BR Dia. 1/109 16-ton Steel Mineral Wagon (riveted body) and an etched wagon kit, complete with underframe, for a BR Dia. 1/506 Brake Van. Other new stock is in the pipeline. All these items are only available to members of the 2mm Scale Association, so if you're interested in joining, details can be obtained from: The Membership Secretary, 45 Milford Drive, Ilkeston, Derbyshire, DE7 8UU and from their website: *www.2mm.org.uk*

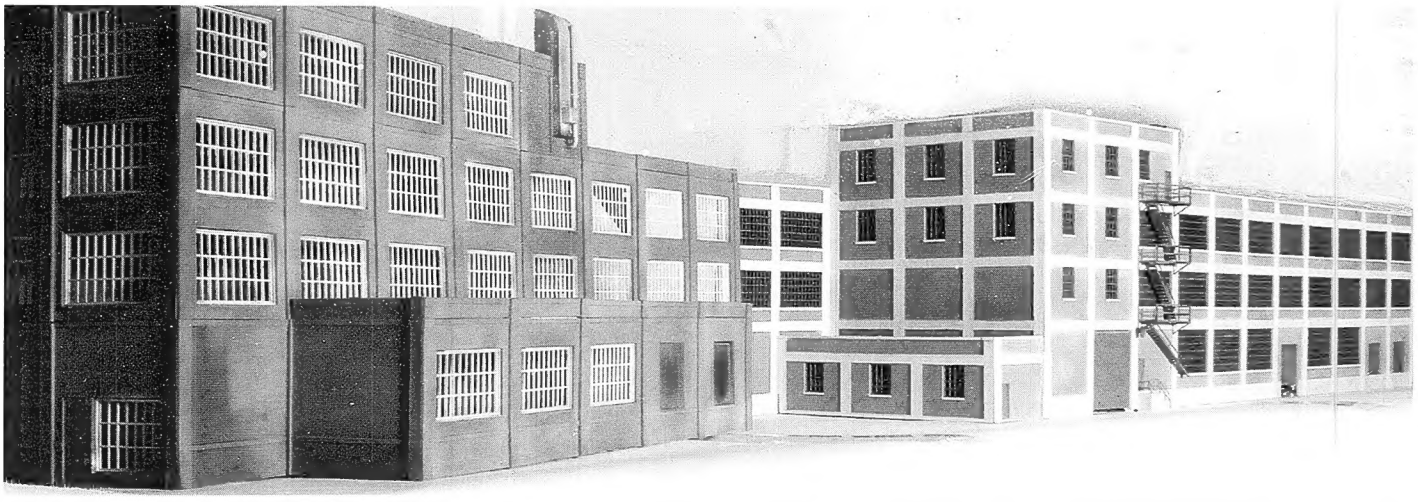
Having delivered most of their promised new products for 2001 (although the improved 08 has thus far failed to make an appearance), BACHMANN are romping ahead with another tranche of 4mm scale RTR models. Development of the Hughes/Fowler Crab 2–6–0 was one of last year's best-kept secrets but the forthcoming Deltic and Class 37 have long been rumoured. There are MkI coaches galore, including restaurant and buffet cars, and in every conceivable livery – let's hope the BR maroon versions will be more generally available than before. Among the ever-expanding wagon fleet are Shocvans and Hybars, a Vanwide and yet more 16T mineral wagon variants. For present-day modellers, the massive 102T HTA coal hopper is promised, along with assorted bogie steel wagons and a four-wheeled TTA tank wagon. As always, these new Bachmann models should be well worth waiting for. Our upgrading and conversion specialists are already honing their modelling knives . . .

TAYLOR PRECISION MODELS have recently introduced a natty nickel silver etch of assorted steering wheels, windscreen wipers and mirrors suitable for detailing 4mm scale road vehicles. Two patterns of wheel and wing mirrors are provided and there are enough parts to furnish three complete vehicles. Costing just £2.00, there is no P & P charge, but for orders under £3.00, send your remittance in postage stamps to: Unit 235, Stratford Workshops, Burford Road, London E15 2SP. Website: *www.tpmodels.co.uk*

COMET MODELS' latest 4mm coach kit is for the Great Western Collett Sunshine stock 61ft Corridor Third to Diagram C77. Built in 1938 and 1940, they totalled 175, a significant quantity for the GWR, and survived until the early 1960s. The kit has etched brass sides, ends and underframe, with an extruded aluminium roof plus whitemetal detail castings. The correct pattern 9ft pressed steel bogie has an etched brass stretcher with cast whitemetal overlays for the side frames. An interior is provided complete with etched corridor partitions. Kit KW45 is priced at £33.00 and although wheels are not included, a set of Romford 00 wheels and bearings can be supplied at £3.95. The sides (W45) are available separately for RTR conversions or scratch-building and cost £7.50. Comet are at: 105 Mossfield Road, Kings Heath, Birmingham, B14 7JE. Tel/Fax: 0121 242 2233. E-mail: *sales@cometmodels.co.uk* or visit their website at: *www.cometmodels.co.uk*







Scratchbuilt buildings and other lineside structures have long been the norm for finescale modellers, not least because of the relative paucity of decent kits and the over-familiarity of the handful that are available. Recently we reported that the excellent Design Preservation Models from the USA are becoming more generally available from British retailers, courtesy of Bachmann's trade distribution network. Along with Bachmann's own 'Cityscenes' range of kits, DPM are widely acknowledged as being among the best sources of buildings for the urban modeller, and they are a favourite of American kitbashers. With a bit of thought and imagination, however, many of these structures have applications in a British context. Tim Shackleton (never one to do anything by halves) built this huge factory complex using DPM's modular components for the foreground building. The plastic parts come in bulk packs – this one is called 'Steel Sash Window Industrial Building' – which are available in a variety of architectural styles and can be assembled in any number of ways. The curtain-walled building behind is a low-relief adaptation of another popular American kit, this time 'Geo. Roberts Printing' from Walther's 'Cornerstone' series. Although both structures are nominally HO scale, the size differential is barely noticeable. This anonymous – though undeniably impressive – industrial architecture would be at home on an urban layout set in any period from the early 1900s to the present.

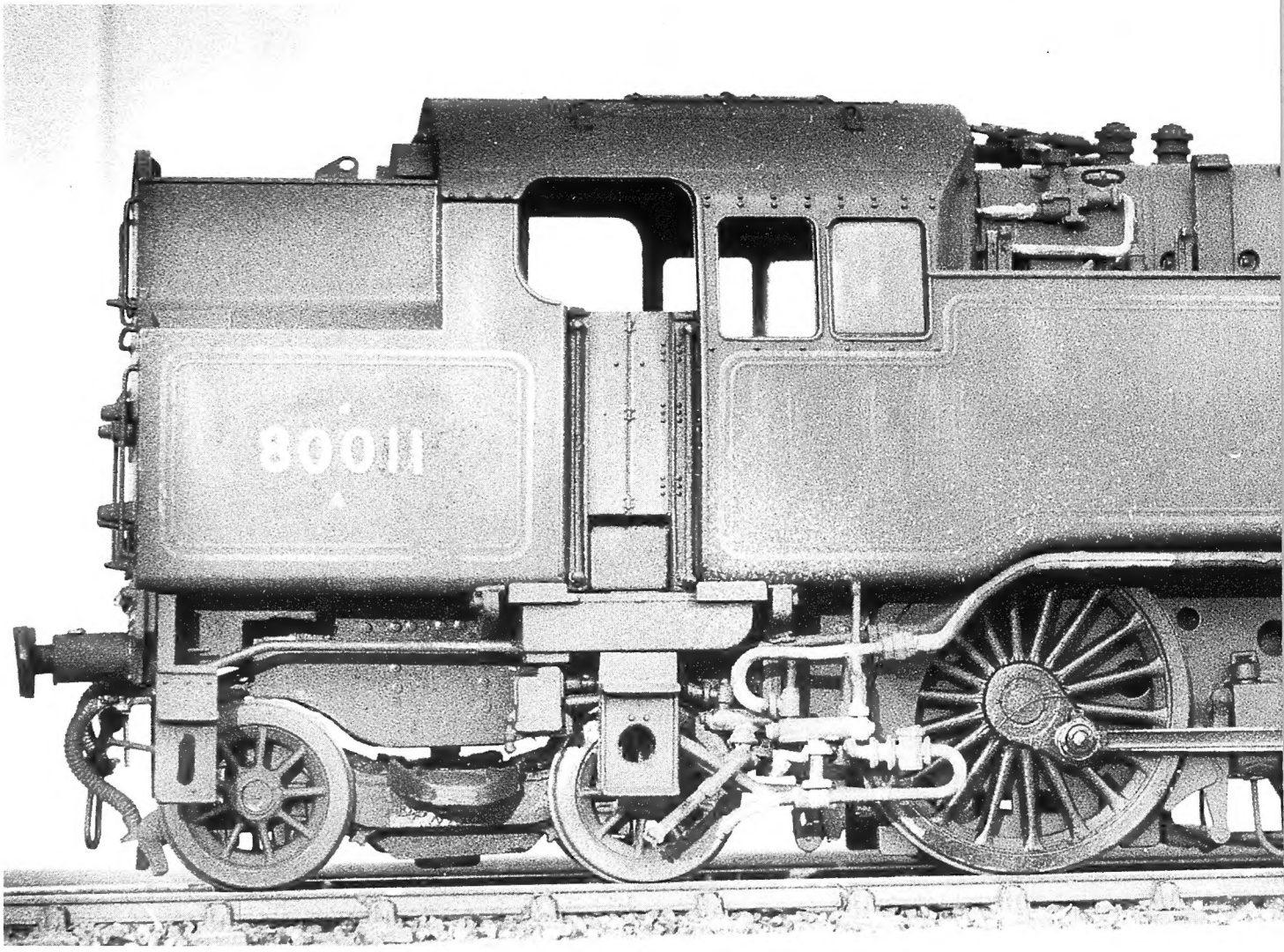
STANDARD PROCEDURES

With an eye to easy P4 conversion, TIM SHACKLETON looks at the Bachmann model:

I'm pleased Bachmann's latest 4mm scale offering is the BR Standard 2–6–4T. No doubt about it, this was a sexy-looking engine – and an opportunity to produce an equally drop-dead gorgeous model. Welded construction endowed these locomotives with a smooth, firm skin and flowing lines unbroken by fussy rows of rivets. Voluptuous curves around the cab, bunker and side tanks are central to their appeal, and represent the qualities a model most needs to capture. In the days when moulding tools were produced using three-dimensional pantograph millers, these things weren't always easy to get right, but the digital technology available to today's high-end manufacturers makes perfection infinitely more attainable.

There's a price, of course, in that nearly-but-not-quite is no longer good enough. The proprietary market has refocused its priorities and now expects models to look fantastic and run as well as the best imported products – the punters are no longer satisfied with second best. On our side of the river, the culture of 'it's only a ready-to-run model' has become all but obsolete. Last year, 15% of the entries for the Deputy Chairman's Cup at Scaleforum were RTR-based, and the qualitative difference between proprietary and hand-built locomotives is increasingly hard to define. And while I can't imagine Beattie's or Toymaster ever stocking loco kits, I happen to know that a party who is widely regarded as the most creative model-maker in the country is also the proud custodian of a Dapol 'Pendolino' …

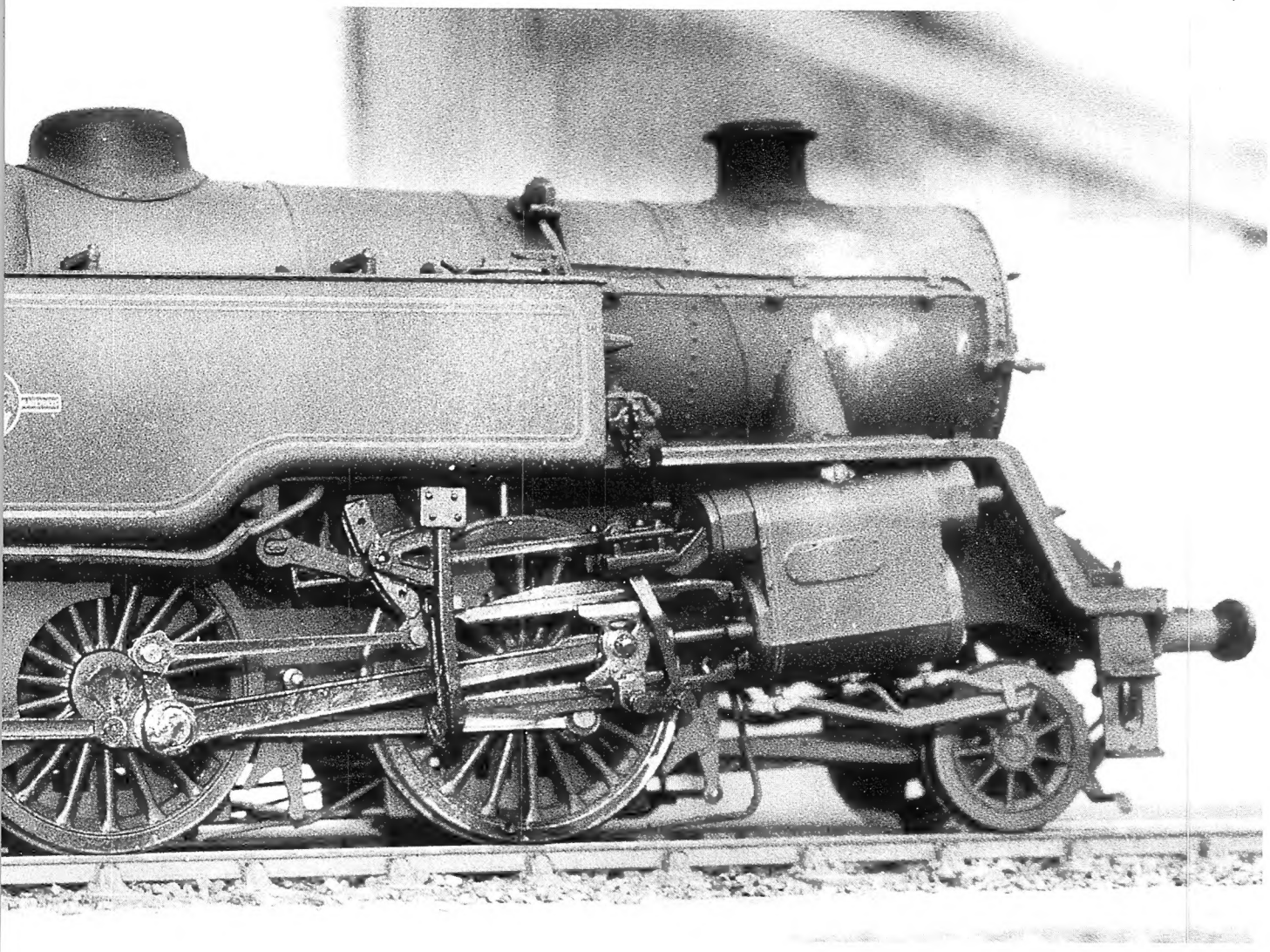
Bachmann's new 4MT 2–6–4T is a further step down the road that began with the N class mogul and has so far taken in the WD, the 08 and a superb range of Mk1 coaches. And yet to any modeller old enough to be worried about the adequacy or otherwise of his pension provisions, the class will always be associated with the old Hornby Dublo version. Leafing through Michael Foster's definitive *Hornby Dublo Trains*, I was amazed to discover it was first released as long ago as 1954. It was a fine model by any standards – considering it's not far off its fiftieth birthday, it's an exceptional one.



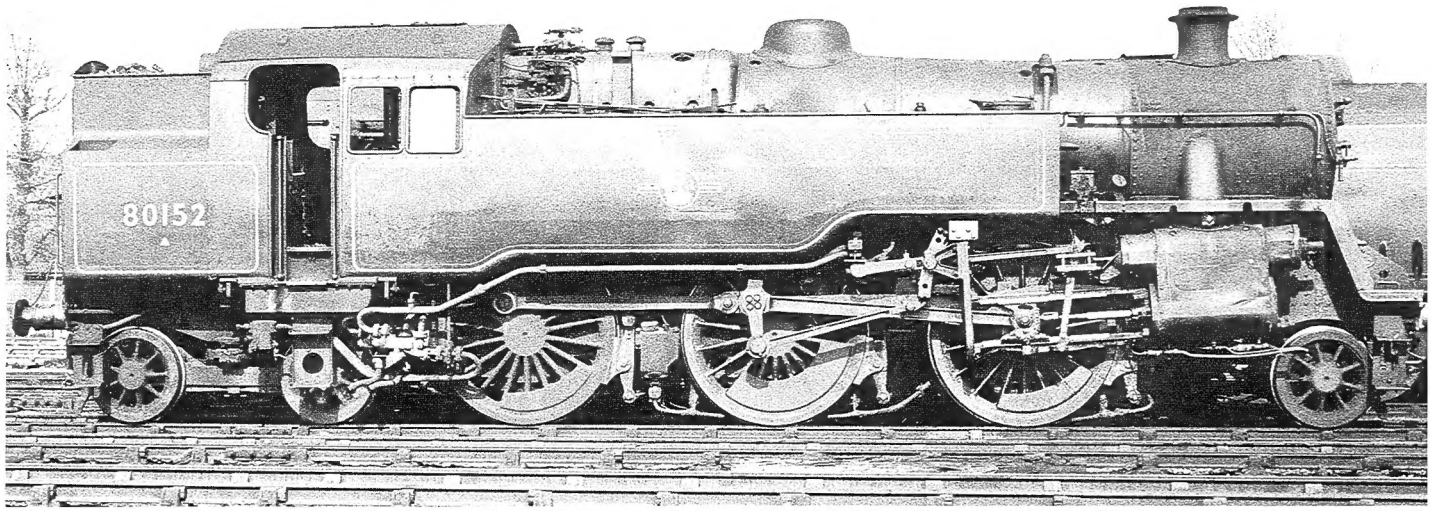
With the passage of time we can forgive the coarse chassis, massive valve gear and undersized wheels – it's the body that counts because, unlike Dublo contemporaries such as the Duchess and A4, it actually looked like the real thing. The proportions and general outline captured the prototype with a fidelity that was extraordinary for the time, and looks impressive even now. I know this model well because I have a spare bodyshell for test-shots with new weathering techniques – though many times overpainted, its blobby chimney identifies it as the original three-rail version, 80054. The two-rail loco of 1959, 80033, has something far more prototypical and the same casting is used on the revised three-rail model, 80059. Released in 1961 and in production for just two years, this is the one the collectors go for.

Some excellent finescale models have been made using modified Hornby/Wrenn bodies, especially after Comet brought out a chassis kit for it – the DJH kit, released in the late 1980s, was less of an advance than one might imagine. Both are now redundant, however, because Bachmann's interpretation is every inch the equal of their superb WD 2–8–0, and looks set to be regarded as the standard work on the subject for the foreseeable future. As with their earlier models, the procedures involved in converting the 4MT to suit EM or P4 parameters are largely routine. The appearance of the model is little short of exquisite, but the running – which we'll come on to in a moment – may be more open to question. There's no denying, though, that those digitally-generated shapes and curves capture the subtle feel of the prototype with remarkable accuracy. The Junoesque bulk of the locomotive is enhanced by the delicacy of the pipework and other hand-applied fittings, moulded in a flexible acetal plastic which, in normal conditions, is virtually unbreakable.

The rear three-quarter view is especially convincing, and I see why Bachmann chose it for their publicity shots. One of their great triumphs, at least as far as RTR steam locomotives are concerned, lies in the suggestion that 'body' and 'chassis' are all part of one big, heavy, unified whole. Look at, say, a Mainline 'Jubilee', or almost anything by Hornby, and the two appear to be entirely separate entities, the great mass of the boiler and footplate perching uncomfortably on top of spindly running gear. When I first started rebuilding RTR locos, one of my priorities was finding ways of losing this effect. The resulting 'dropped suspension' look was one of the features of my models that people quickly picked up on. Getting the axes of the wheel centres in correct proportion to the running plate, eliminating all unprototypical daylight, achieving the correct frame outline and fitting full sets of brake rodding and sanding gear was awful hard work at times, but nowadays



Bachmann do it all for you. When I was writing *Plastic-bodied Locos* I little dreamed that, within two or three years, I'd be able to buy proprietary models that were dimensionally accurate, looked like they weighed 100 tons and ran beautifully. This 4MT even has sandpipes, a full complement of separately-applied boiler plumbing and, most wondrous of all, an oscillating radius rod – now that is something that even the best kit designers usually fudge. I bet not one modeller in ten has spotted this feature, simply because they don't expect an RTR model to have it.



Looking surprisingly spruce for such a late date, 80152 is seen at Eastleigh on 11th May 1967 – it was withdrawn two months later. The short injector overflow pipes fitted to all but ten of the class are clearly visible, as is a degree of rippling in the side tanks. This engine had the LMS four-bolt pattern of return crank, fitted at build to the last 25 engines only.

I haven't run a vernier over the model because I don't have any scale drawings that look even half-way trustworthy, but it checks out pretty well in comparison with published dimensions. However, I'd like to pick up on a number of points of detail, some worthy of the highest praise and others that merit a gentle query. Among these I would single out:

- separate wire cab handrails – moulded ones in half-relief would have fooled most people
- near-scale lamp brackets – a big improvement on the N
- steam manifold, clack valves etc as good as any lost-wax castings
- full cab detail
- clear separation between boiler and tanks
- fire iron brackets on tank top – one of many hand-fitted details that suggest this model is more like a pre-assembled kit than an RTR model.
- flush-glazed cabside windows – but are they a whisper too close together?

The shortcomings of this model are minimal. Unlike the heavy-handedness of detail that characterises Bachmann's class 25 and, to a lesser degree, the class 24 as well, they relate more to omissions than to errors of judgment, and in consequence are far easier to rectify:

- overscale handrail knobs (inevitably)
- injector pipework ends abruptly at the front of the tanks, instead of tucking in under the running plate (a practical necessity?)
- smokebox door stands well proud of smokebox front instead of being recessed, and lacks the characteristic dished edges (a consequence of plans to fit this model with an opening smokebox door?)
- chimney looks too tall and too thin
- carriage warming valve is of an unusual pattern (perhaps copied from a preserved loco?)
- no steam lance fitting on RH smokebox side
- no lifting rings on front frame extensions
- squaring-off of cylinders and valve chests is overdone, and there is no anti-vacuum valve
- no securing bolts on dome
- ejector pipework incomplete around front boiler ring and ahead of cab
- warning flashes grossly overscale
- tight-fitting packaging may distort pipework
- speed recorder bobs up and down when loco is in motion

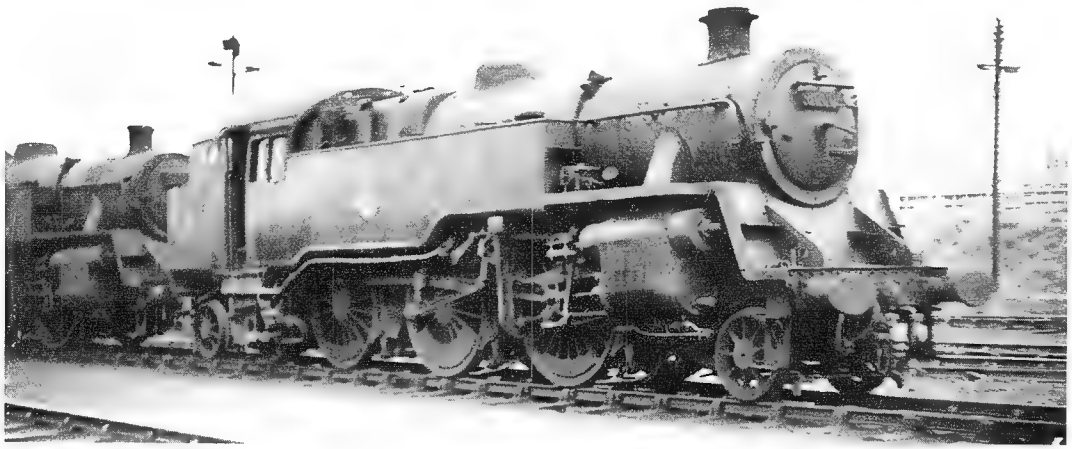
I'd heard good things about the performance of the 2–6–4T and at the third attempt, I finally laid hands on one that ran as well as I thought it should. The first model I bought wobbled alarmingly along my test track and seized up completely after ten minutes' running, radiating heat like a newly-landed meteorite. There was plenty of factory-applied lubrication, the wheels ran true and I looked in vain for anything that was obviously out of alignment. I took it back for exchange, but the replacement was worse, with excessive gear noise and a nasty tight spot on the centre wheelset. Having tried all the remaining models in the shop, the one I finally settled on simply purred along at the first time of asking – why weren't the others like this? Excellence in a commercial product has to be 100% repeatable, not a fluke. One of the biggest retailers in the country has since told me, unasked and unprompted, about other inconsistencies with this model – some of the 4MTs supplied to him had the dome on back to front, while others derailed at the drop of a hat, even on Peco track. Feeling more than a little alarmed, I rang round a few more dealers for corroboration, but they'd had no problems with their stock. Perhaps I'd just been unlucky, Chris Challis suggested.

Maybe. It could be just ill-fortune, or my eccentric insistence on good running throughout the speed range without any stutters, but three of the last nine Bachmann 'Blue Riband' locos that I've acquired have been marginal performers at best, however handsome their looks. They suffered variously from poor quartering, wheels mounted out of alignment, inadequate crankpin clearances and excessive levels of lubricant that quickly spread to the electrical contacts. As some of my earlier reviews will confirm, I've had other examples of the same models that ran and continue to run beautifully – which suggests Bachmann's quality-control department could use a boot up the proverbial. The instructions advocate running locos in for an hour but this isn't

The BR Standard class 4 2–6–4Ts – a modeller's guide

As with all the BR Standards, it was not uncommon to find considerable variation of detail design between individual members of the class built at different times or allocated to different regions. Most of the salient points can be gleaned from the careful study of photographs, but I would particularly recommend Volume 3 of *A Detailed History of British Railways Standard Steam Locomotives*, published in 1997 by the Railway Correspondence and Travel Society. Heavily illustrated and just as readable as the LNER 'green bible', it offers a mass of information on the technical and operational background to the BR Standard tank classes. No other reference work on these engines is remotely in this league, but it still doesn't tell the whole story …

In all but minor detail, the Standard 2–6–4T was a Fairburn loco with the angles rounded off to suit the universal L1 loading gauge. Despite the provisions of the 1951 building programme, the engines were not delivered in strict numerical sequence – in date order, but with some degree of overlap, their entry into service ran 80010–30, 80000–9/31–53/9–78, then back to 80054–8 before picking up the trail again with 80079, after which there was a clear run through to 80154 with the exception of 80106–15, the sole Doncaster-built batch, which managed to insinuate themselves between 80098–9. The two groups of laggards – 80000–9 and 80054–8 – were built at Derby but all the others came from Brighton, more or less on schedule. Initial regional allocations were: LMR 80034–53/9–68/81–95; ER (LTS section) 80069–80/96–105/31-44; NER 80116–20; ScR 80000–9/20–30/54–8/106–15/21–30; SR 80010–19/31–3/145–54. The Western Region is conspicuous by its absence, but almost from day one these locomotives began to move around the country. With the exception of the Glasgow-based clan and the sizeable contingent on ex-LBSCR lines, they were rarely associated with any particular area for more than a few years at a time. Even where work was found for them, a sequence of line closures, changing traffic patterns and the rapid spread of dieselisation meant that they were often just one step ahead of redundancy. With their limited coal and water capacity, they could never be as ubiquitous as the Standard 4–6–0 classes. A handful of Scottish engines managed to stay at the same shed all their lives but most wandered far and wide. To choose just one example, No 80059 was successively allocated over its twelve-year career to Kentish Town, Chester, Bangor, Neasden, Dover,



Although of less than 'ABC' quality, these shots show some interesting variations. No. 80005, at Eastfield on 30th July 1966, had what I assume to have been securing brackets for lamp irons on the smokebox door, a feature exclusive to Nos. 80000-9. Also at Eastfield on the same day was No. 80054, the old Hornby-Dublo three-rail engine. This was from an odd batch of five built at Derby in 1954 that mixed the forward-mounted tank vent characteristic of the later locos and the earlier type of fluted coupling rods. It also had a cabside recess for a tablet-catcher.

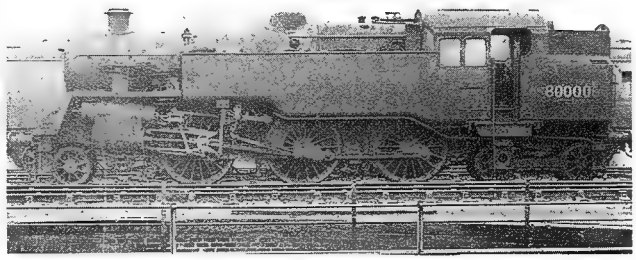
Ashford, Tonbridge, Exmouth Junction, Templecombe, Bristol Barrow Road and Bath Green Park.

Grouping the engines into works/regional batches enables us to see more clearly when and where the various detail changes come in. As usual, I'm only going to look at those that significantly affect the outward appearance (exam question: define 'significant'). Working our way backwards from the smokebox end, we might check for Swindon-pattern lamp irons on engines re-allocated to or transferred away from Western Region. None had these from new – the 4MTs only reached WR metals in the 1960s after initial allocation elsewhere, and many soon moved on, most probably without acquiring replacement lamp brackets. However, all but a very few Southern engines had at build (or acquired on arrival from other regions) an extra pair of lamp irons on either side of the smokebox door dart – there was a similar pair on the bunker rear, but note that there are at least two variations in pattern and position. Nos 80000–9, although always allocated to the Scottish Region, were unique in having what appear to be blank fixing points for these extra lamp brackets on the smokebox door. Possibly the brackets were fitted at build and removed shortly afterwards, but No 80001 definitely had the actual lamp brackets themselves, and this as late as 1966. Some Scottish engines also had provision for buffer-beam mounted snowploughs, but to see an engine actually carrying one was rare.

From 80079 onwards – the final eight Brighton batches and the ten Doncaster-built engines – fluted coupling rods gave way to the plain fishbelly type. There was no problem with the original rods – this was merely a precaution, following difficulties with some of the other BR Standards. This modification covered all engines released into traffic between March 1954 and March 1957 with the exception of 80054–8 which, of course, were delivered out of sequence in December 1954/January 1955, still with fluted rods and various other quirks. All but 25 engines at first had the LNER's circular pattern of return crank, with two vertical fixing bolts. The exceptions were engines from the last three Brighton batches, 80121–54, which had the LMS type with four prominent studs, which style was retrofitted to some of the earlier engines. A speedometer was routinely fitted to all engines from 80059 onwards, the sequence looping round to encompass 80054–8. It was driven by a crank off the rear nearside driving wheel, and a number of earlier engines acquired one in due course. Speedometers were removed from some locomotives over time, but in odd cases the crank remained in situ.

As built, the running plate valance butted right up against the side tanks, but from the mid-1950s, the section directly under the mechanical lubricator was generally removed, leaving a prominent gap. Over time there were more modifications to the upper works, all towards the rear end. The carriage warming valve on the right-hand side of the firebox is usually enclosed in a drum-like casing, but occasionally it is exposed (or maybe it's a different type of fitting altogether). To avoid fouling the mass of pipework in this area, the tank breather vent on the fireman's side was just ahead of the safety valves. On 80000–53, however, the vent on the driver's side was positioned hard against the spectacle window. This did nothing to improve the view ahead, so from 80059 onwards (and again backtracking to include 80054–8) it was repositioned a couple of feet further forward, directly in line with the safety valves. The earlier engines remained unaltered.

Some engines, irrespective of batch or regional allocation, have what appears to be a secondary rainstrip directly above the line of rivets along the cab eaves, while a minority of locomotives – usually Scottish and Southern examples – acquired sight screens between the cab windows. Most if not all Scottish engines had a recess under the left-hand cab windows to take Manson tablet-exchange apparatus, if required. The RCTS history records



The side view clearly shows the original position of the nearside tank vent, immediately ahead of the cab spectacle.

80004/5/20–3/6/8/9/55/7, 80111–4/21/4/6 as being definitely fitted with tablet catchers at various times, but this would obviously depend on depot allocation and duties.

Derby-built Nos 80000–9 had a different pattern of injector overflow piping to the rest of the class – instead of being abruptly downturned ahead of the cab steps, the pipes are noticeably longer and pass behind the steps to discharge on to the ballast from a position closer to the rear of the engine. All engines in the class had fittings for water pick-up apparatus but the RCTS account suggests only 80034–53/59–68/81–95 carried the actual scoop – having looked hard at photographs, I'm still not entirely convinced you can see it, but I mention it here for the sake of completeness. Another optional extra concerns ATC/AWS apparatus which, if fitted, was mounted on the bogie. Many engines had provision for this but relatively few seem to have carried it – look for the bang plate below the rear buffer beam.

In later years several engines show evidence of replating on the bunker rear. Southern engines, as we know, had an extra set of lamp brackets, below and inboard of the middle set of steps, while photographic evidence suggests that engines not so equipped nevertheless carried the fixing bolts for same. A number of engines have lifting rings at the top of the bunker side sheets, though as they are usually obscured by coal, their existence, or otherwise, is hard to verify. They are present in some high-angle shots of locos with half-empty bunkers, but not others – I can't infer any pattern or logic from such fragmented information. Cab roof details are just as difficult to ascertain from photographs. A riveted panel surrounding the roof shutter is definitely present on some engines, but is not immediately obvious on others (among some BR Standard classes – the 9Fs in particular – the roof details vary from batch to batch). What is much clearer is that from 1960 onwards, the majority of Southern Region locomotives were fitted with lifting brackets on the cab roofs.

Paint and insignia follow more consistent patterns. The class was delivered in lined mixed-traffic livery and while some BR Standard locomotives ran in plain black in the 1960s, I don't remember any 2–6–4Ts in this form. The final engines into traffic would have carried the 1956-style totem, all others being delivered with the earlier lion-and-wheel symbol. Of the other main differences, the ten locomotives built at Doncaster, 80106–15, had ten-inch cabside numerals when new and so did many engines overhauled at Darlington. Large numerals were familiar on Scottish engines also, but the majority of that region's allocation of 2–6–4Ts had the normal eight-inch type. The bunker-side power classification appeared in a variety of styles, generally just a single figure 4 but, as ever, best confirmed by the study of photographs. Southern engines with water-softening apparatus carried a small yellow triangle below the number. Some engines had their self-cleaning smokebox gear removed but whether the SC plates were taken off at the same time is debatable. These were not always present in any case, and in latter days all cast insignia was fair game for the unscrupulous collector.

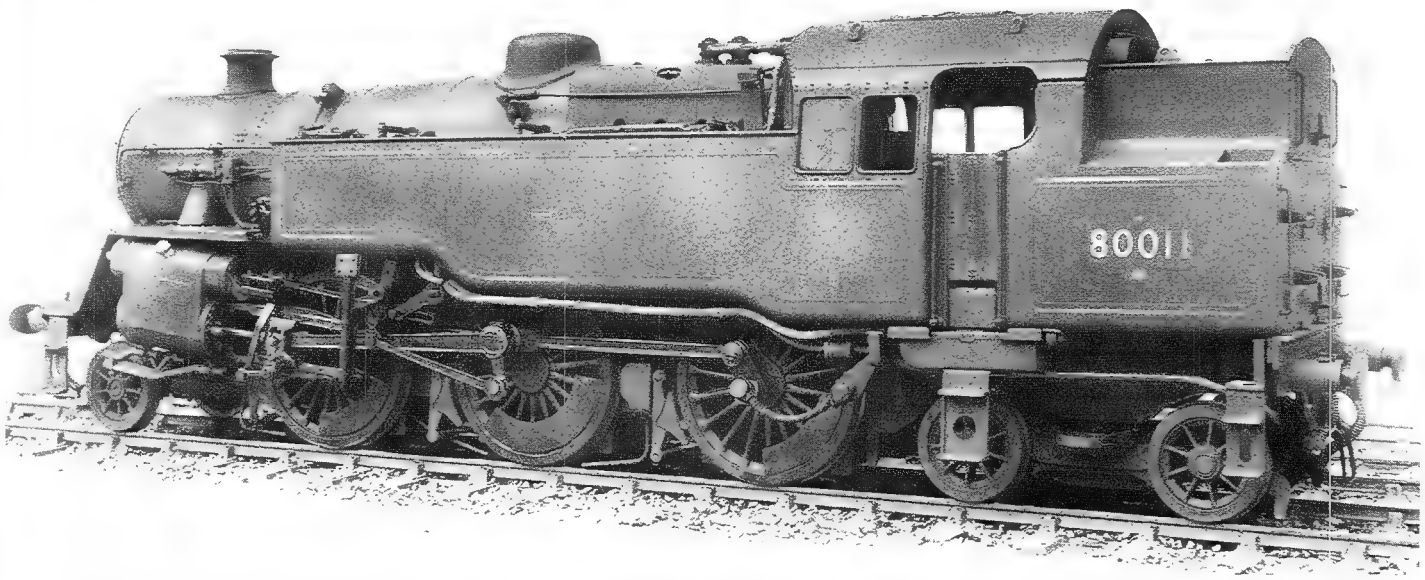
going to cure rough spots and other problems caused by inconsistent assembly techniques – it makes things worse. Running in merely helps a smooth-running locomotive run smoother still, it doesn't flatten out the bumps.

While it's always irritating to have to return defective products, I think my experience shows one of the prime advantages of paying a little extra and supporting your local model shop – you can readily exchange unsatisfactory goods and/or test-run an RTR engine until you're satisfied. Despite the provisions of the Sale of Goods Act, sending back duff mail-order items is a hassle and at times verges on 'Dead Parrot' territory (just try asking to have your return postage costs reimbursed). When margins are already slashed to the bone, the discount houses don't want their credit-card hotlines blocked by irate customers demanding their money back, still less do they want their stock-rooms cluttered up with faulty goods which are of no use to man nor beast. From what I hear of the less scrupulous operations, I suspect that all but the worst of them go straight back out again.

But back to the business in hand. After Heljan's beetle-crushing class 47, the 2–6–4T is something of a lightweight, tipping the scales at a mere 12oz (350g). Its haulage capacity seems OK, however, for the kind of work most modellers would find for it. I remember these engines on Glasgow business trains loading to ten bogies and more, but for the most part they were ludicrously over-powered for the work in hand, effortlessly trundling three-coach locals around Kent and Sussex, the Central Wales line and over the Somerset & Dorset. With 48:1 gearing and a rather nice medium-revving motor, the top scale speed of the model is around 60mph, mechanical noise is or should be minimal and, assuming you've bought a good'un, steady running at a 2mph crawl is no problem once the model is run in. I'm sure a bit of extra weight (or a flywheel) would improve the shunting performance, because mine has always had just a faint touch of hesitancy when starting off, dead slow. The centre axle is sprung so, in theory, at least five wheels will be on the track at any one moment, but with two rigid axles the movement of my P4-converted model tends to be cumbersome and lacks the track-hugging silkiness of, say, the ten-coupled, fully-sprung 'Decapod' that we looked at recently.

So what, in terms of the real thing, are we buying? Bachmann's first release gives us two choices. The model with the second type of crest is typical of the later prototype batches that I've described in the accompanying notes. Numbered 80097, it has plain-section coupling rods, forward-mounted tank vents and a speedometer. Suitably renumbered, but ignoring minor differences of detail, it would cover any locomotive on any region within the number sequence 80079–154, with the exception of (a) SR engines with extra lamp brackets and (b) ScR engines with recess for tablet catcher. The alternative model with early crest is numbered 80061. This has the same bodyshell as before but comes with fluted rods, and so it relates to a far more restricted group of prototypes, the 25 engines numbered from 80054–78. Apart from five at Polmadie, all were London-area engines, allocated either to Watford or Plaistow, but by 1960 they had migrated en masse to the Southern or Scottish, and would have acquired those regions' characteristics. I know not everyone is fussed about these things but, unless you have a model of Euston or Fenchurch Street, the options are pretty limited, even after renumbering. To recreate an engine in the 80000–53 series, which offers much wider scope, you'll have to do a small amount of surgery over and above the routine procedures which I'll describe in the next issue. In the meantime, I've attached a shopping list of the extra bits you'll need for a P4/EM conversion.

Alan Gibson	4868ST/3 (3mm axles)	driving wheels
	4836ST (3 packs)	pony/bogie wheels
	4M42	crankpins
	7'7" × 7'9"	coupling rods
	4M671	Std 4MT chimney; medium handrail knobs; 0.33, 0.45, 0.7 and 0.9mm brass wire
Jackson Evans	JE115	balance weights
Comet	LF42	BR class 4 frames
	LS03	plate frame pony truck
	LS04	6'3" WB bogie



The Bachmann model is an excellent basis for conversion to any of the variants within the class. No. 80011 is very much a Southern Region engine – the extras visible here include additional lamp irons, cab-roof lifting rings and a repositioned tank vent.

New SOLDERING UNIT

The editor's been playing with a new toy, but despite his usual aversion to technical devices, he hasn't thrown this one out of the pram . . .

I was sitting behind the MRJ Workshop stand at Warley discussing the dubious delights of canteen tea with a passer-by, when a couple of fellows approached and asked if I would be interested in trying a new soldering unit at some time in the future. Feeling a little uncomfortable that they should ask someone whose soldering knowledge can probably be summed up in about twelve seconds, I dutifully pointed out that I wasn't perhaps the most experienced wielder of the hot stick and that my old digital Antex soldering station, although now looking a lot worse for wear after many years of abuse, was still functioning well. I know the handle's started to melt a bit in places and the main lead is beginning to fray round the edges, oh and the main unit's plastic body valiantly displays a few scorch marks from dropping the iron onto it, but it must be at least twenty years old now and it's just showing its age. However, I was persuaded that a simple review by someone not exactly holding a degree in arc welding would probably be more constructive for those in a similar boat, and a few days later a large box arrived at the Welch workshop in sunny Devon.

Neatly packed inside with the soldering station was a choice of soldering bits, some professionally-produced instructions and several brochures illustrating the range, its accessories and other equipment manufactured by the same company. The photograph shows the neat design of these new units and setting up the analogue version I'd received was simplicity itself – a major requirement for someone of my minimal mechanical aptitude.

The main power unit and its free-standing storage compartment that simply butts up against it are stoutly made of metal, which should discourage my habit of burning holes in anything that comes near the hot, pointy part of the iron itself. I liked the bit shape and size, although there are various alternatives you can choose from their catalogue if you prefer, and I also felt happy with the comfortable feel of the handle with its built-in stop that prevented my hand inadvertently slipping down to the dangerous end. This soft rubbery-gripped handle also remains cool throughout the soldering sessions.

The rows of holes on the top rear of the free-standing storage section are there for parking spare bits, whilst just below the soldering iron's storage receptacle there's a natty sponge tray that can be swivelled into various positions to suit the location. One advantage of this separate section is that it can also be butted up to the left side of the main unit, rather than the right as illustrated. I suppose, if space were right, the power unit could be parked on one shelf with the storage unit on another below if necessary.

One of the most common failings of any soldering irons I've used to date has been the tendency of the bits to etch away over a fairly short period of time. Now whether that's down to operator error, lack of cleaning or using the wrong flux/solder, I'm not too certain, but I've been using this new iron for several weeks now and its tip looks as good as they day I unpacked it. I've also noticed how much faster it heats up when I adjust the temperature. My Antex was quite nippy, but this beastie reaches the required temperature almost as speedily as I can adjust the dial, which saves a lot of time between soldering sessions, knowing the heat can be adjusted quickly according to the solder or materials being bonded. Of course, any iron will cool down a lot slower than it will heat up, but this one appeared to cool down quicker as well.

Paul Cooper, of importers Blundell Production Equipment, is far better qualified to describe the technical niceties of soldering and how this new soldering station resolves some of the problems we amateurs encounter from time to time, so we've reproduced here an edited summary of the text he provided:

Why the most important elements of soldering are the accurate control of temperature, and quality and type of solder tips

Because in our business we are always soldering under difficult conditions and soldering dissimilar material with massively different heat dissipation characteristics, it is vitally important that we use the right equipment. We have managed before by using different irons for the various jobs we are trying to perform and I have come across a number of you with as many as five different irons and still, in some cases, you find it difficult to be consistent. Virtually all are using soldering equipment meant for the casual modeller, equipment that is designed to be used once or twice a week to solder a piece of wire to a connector of circuit board and with soldering tips made of copper that require filing almost every time they are picked up.

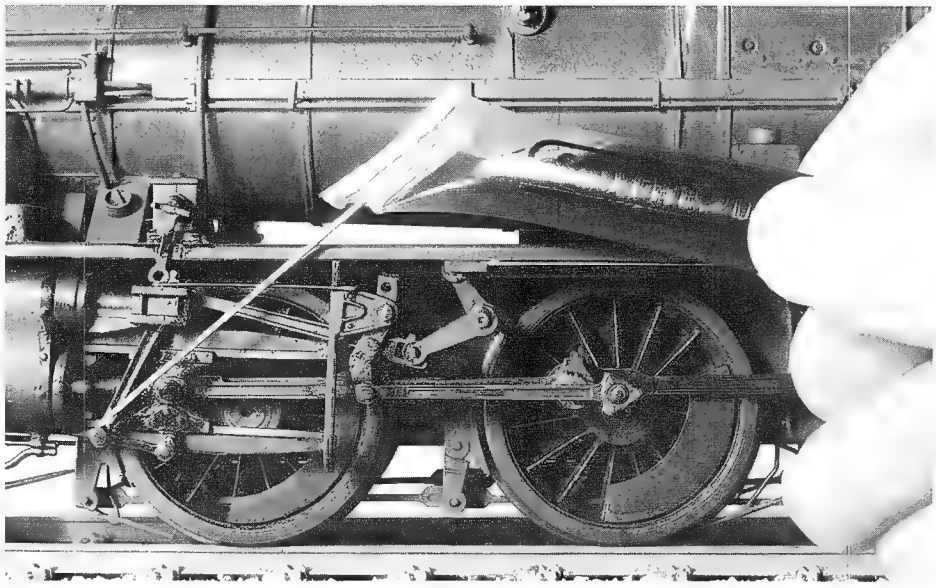
What we are generally doing deserves better than this and our frayed nerves and patience require it. Most soldering irons, and not just the low-cost modellers' units, pay lip service to temperature control. Typically, the older stations with some form of digital read-out are better than those with just a knob or a screw in the hand piece, but all are controlled by some form of temperature sensor, at least 20mm, and in some cases 30mm away from the soldering tip, making reaction time too slow. To compensate for this, tip temperatures of 400°C+ are not uncommon. The relevance of this as a problem will become clearer later. Some irons have tips that fit inside the element and in this case the heater is not only trying to push heat back into the tip, it is also wasting the biggest part of its energy heating the air around it. Others have a tip that fits over the element but are loose fitting and as such create poor thermal contact – again making heat-up time too slow. All of these points are making what we are trying to do difficult. Some of you won't even be aware that the problems you experience with soldering are not just inherent in the operation and therefore they are not really problems at all, just unavoidable obstacles. Making a good solder joint is not only easy, it is essential for strength and can make the joint a single-touch operation avoiding unnecessary filing to remove unsightly excess solder or rough, pitted solder.

At the risk of offending some of you, can I explain what happens when the perfect solder joint is made? Melting solder is just that. At the temperature required to melt solder you simply turn it from solid to liquid. You do not make a solder joint at this point, you just stick one piece to the other. There is no bond, but it will hold for a while. The only thing keeping the parts together is surface tension. Just like two small glass slides, if you put a drop of water

Continued on page 62

Motion Lotion

John R H Lythgoe discusses 'the right oil or grease for the right job' ...



Seuthe 113 Ultra Adhesive oil is an excellent general-purpose lubricant. As the name suggests, it doesn't fly everywhere and coat the model in a sticky goo. Delivery is via a fine capillary needle. Unlike some lubricants recommended for model railways, it is 100% plastics-compatible.

It is a truth universally acknowledged that finescale railway modellers will expend inordinate amounts of time on a pet project, yet will ignore the basic truth: mechanisms require more than mere care during construction to function correctly. They need after-care.

In the relentless quest for finescale perfection, modellers invest substantial time in literature searches prior to constructing their favoured locomotive or railmotor, then take immense pains to produce a model which encapsulates the character and spirit of the prototype in miniature. Paintwork, lettering and lining is meticulously applied, then subtly weathered, echoing the words of the old Erasmic shaving soap advert: not too little, not too much, but just enough! Valve gear is milled, filed and polished, then chemically darkened and installed with sedulous care using crankpins which are of close-to-scale size and finished appearance. The model lives – and almost breathes! At exhibitions, we proudly show the newly-created masterpiece to our peers, then, to the constructor's ill-concealed chagrin, some bright spark says: "Okay, now let's see it run, sunshine!" With an initial lurch into erratic motion, the model creaks and groans round a layout. A concerto for tortured bearings, accompanied by wails of abject distress, is emitted from the stricken mechanism. Why?

In our quest for ultimate perfection, we've missed the most important facet of finescale model production: we haven't bothered to properly lubricate the mechanism. When questioned during the post mortem over the seized-up loco, the builder admits that he bought some oil from a man with a van because it was cheap. Well, he expostulates, the loco's gearbox cost him a packet – and the motor! Nearly had to re-mortgage the wife's horse and a couple of last season's hats for that one. And besides, this thing's got fully compensated suspension, correctly jointed coupling rods, adjustable sprung hornblocks and a forked speedometer drive on the left hind axle. Not to mention a set of matched specially-turned driving wheels, minimum-force sprung buffers – and real coal in the tender. So, oil is oil, isn't it, mate?

Actually, no, it isn't. Throughout twenty-eight years of full-time professional modelmaking, the one question my customers have consistently asked is: how do you get your engines to run so smoothly? Even the R-T-R ones, new off the shelf. Nobody else is listening, so I'll let you into a carefully guarded trade secret. Care in construction apart, it's called lubrication. Motion lotion. The right oil, or grease, for the right job. Not just any old oil – and certainly not the somewhat questionable stuff wielded by that shifty character at the car boot sale last week.

'Certain oils and greases cause embrittlement of the plastic from which many of our loco bodies – and some of the wheels and gears – are moulded. So they crack and fall to pieces.'

Finescale modellers should be aware that certain oils and greases cause embrittlement of the plastic from which many of our loco bodies – and some of the wheels and gears – are moulded. So they crack and fall to pieces, with disastrous results when someone's prize-winning hand-built finescale Stanier 'Jubilee' is forging bravely up Mallerstang at the head of the Thames-Clyde Express at the club exhibition, in front of enraptured onlookers.

Yet some people still use commonly-encountered lubricants primarily because they're cheap. It's demonstrably false economy, because the loco now endures frustrating down-time being expensively re-wheeled, or re-geared at the very least, all because chummy used the wrong oil.

MOTOR LUBRICATION

Elect for quality not quantity, and the result is quiet sweet running, allied to very long bearing life. For the fast-revving shafts of your motive power, try just a small spot of Seuthe 113 Ultra Adhesive Oil. It permeates porous bronze bearings beautifully and resists centrifugal force. This high-quality lubricant is acid and resin free and is plastics compatible, a significantly important factor in our hobby. At the time of writing, a small ampoule costs around £1.35 from a few of the more clued-up modelling emporia. The fine capillary tube applicator included in the package simplifies the precise application of tiny quantities of Seuthe 113, whether you employ the faithful open-frame X04 family and its Airfix, KTM, Pittman and Romford brothers, the modern generation of powerful cans or the more costly current-saving coreless motors. I have used and trusted this high quality oil for over twenty years.

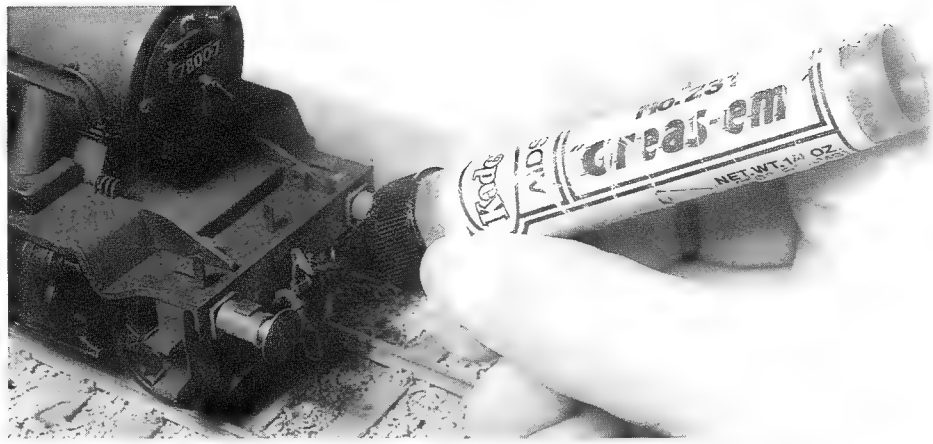
If your favoured motor has metal-to-metal bearings, Seuthe 113 is ideal. Don't just rely (as some modellers do) on the

manufacturer's lubrication regime in the factory. Equally, don't neglect the shrouded rear bearings in the faithful Mashima and Canon can motors. Once the motor bearings are well and truly run-in with the help of Seuthe Ultra Adhesive oil, useful life is extended tremendously by using a pin or cocktail stick to add a tiny spot of Molyslip. This highly respected molybdenum disulphide additive is in liquid form, available through the more discerning motor trade outlets. We wrinklies have been adding MoS_2 to our car engines, in one form or another, since the mid-1950s to reduce wear and tear and thus combat planned obsolescence. The car engine grade now comes in a rip-top can, so when you've bunged most of the contents into your manual gearbox Mini's A-series motivator and heard the revs rise some ten per cent because you've just zapped a whole heap of friction, decant the remainder into a clean small plastic bottle and consign it to the railway room. The reserve of Molyslip in your stores will last for years, and you won't begrudge the minimal cost. Applied to the X04 *et al*, their performance undergoes an amazing transformation.

Other high-tech motor lubricants have arrived in recent years, notably those such as PM Xeramic which utilise space-flight technology. Again, the cost to modelling is defrayed by the benefits to your car engine! PM Xeramic is best applied to motor bearings with a precision syringe when the assembly is (a) run-in, and (b) warm from use. Following treatment, the loco should then be put back into service for fifteen minutes, to allow the synergetic combination of lubrication film reinforcing and friction reducing properties to take effect.

MOTOR COMMUTATORS AND BRUSHES

These are the bits you don't oil. On open-framed motors (where you can get at them), they should be kept bright, shiny and free from the malignant sooty and potentially flammable deposits indicative of over-oiling and neglected maintenance. Most importantly, don't be tempted to add some silicone-based 'miracle-cure' to the nice shiny commutator in the fond hope that it's doing some good. It's not: it will accelerate the process of wear and tear, which is counter-productive and expensive.



Kadee's Greas-em is a dry lubricant, ideal for screw couplings and sprung buffers. Only a touch is needed – this tube was old when MRJ was young, and is still going strong.

The best way to apply a plastics-compatible grease is via a disposable hypodermic syringe. Here, a newly-assembled High Level 'Precision' gearbox receives equally high-precision lubrication, prior to running-in.

GEARS

Here, I'm talking of the more mundane articles for which most layouts can find space. I'm the first to acknowledge that the hobby is moving onto high efficiency enclosed spur, bevel or worm drives. However, there are still a lot of very worthy locos powered by open worms and wheels. For such beasts, you have a choice of quality lubricants. Seuthe 113 is admirable here, but on the principle that grease is more persistent than oil, look around. RS Components Limited (known as RadioSpares in days of yore) supply Multipurpose Grease (their stock number 556–446). This is excellent stuff because, amongst other things, it is a first-class mechanical lubricant for bearings, small gears, pivots and slides (but not meter and watch bearings).

It has special anti-corrosive properties for lubricating thermoplastics under stress. Remember that plastic worm wheel meshing with the brass worm gear on the X04? Ideal! And those plastic-to-plastic gears? Perfect! Insist on the genuine grease with the correct stock number printed prominently on the tube, not someone else's supposed 'equivalent'.

Metal-to-metal gears? We're now talking relatively heavy duty stuff so, after running-in on RS Multipurpose Grease, contemplate a touch of Molyslip grease, or alternatively Rocol MTS 1000. And I do mean a touch, because domestic management won't appreciate this black stuff smeared on shirt cuffs and sleeves. To borrow the sales tag from Real Geordie Marmalade, it's *extror claggy*.

Murphy's Law ordains that molybdenum disulphide greases only migrate to freshly-laundered white shirts: the tatty care-worn Country'n'Western checked variety seem relatively immune. You have been warned. These speciality greases are best decanted into small polyethylene syringes (wear disposable gloves for this potentially messy job) and thence can be carefully dispensed in relative safety.

In the same way that your local model shop won't be overjoyed to sell you just one Alan Gibson crankpin rather than the infinitely more desirable complete packet, don't expect to be able to obtain an itsy-bitsy teeny-weeny quantity of MoS_2 grease. A macho 500g tin (or plastic keg) comes from your friendly knowledgeable automotive bearings distributor on the industrial estate (not the motorist discount boyos). Be sociable: share some of the valuable contents of the tin with the chaps in the club.

If you favour a fluid like Molyslip above, but something slightly more viscous, try this tip. When changing the gearbox oil in your manual shift car, inject a shot of Molyslip Gearbox Protection. It quietens the box, sweetens the task of swapping cogs, makes driving altogether more pleasurable – and lengthens the life of the gearbox. Decant the remainder of this wonderful product for model railway use. Metal-to-metal gears really benefit from just a touch, added to Seuthe 113, but run-in those gears on neat Seuthe 113 first!

For those blessed with more generous budgets, Rocol produce Dry Moly Paste which has myriad industrial applications because of its resistance to high loads. It is used to lubricate a wide variety of sliding mechanisms including plain bearings, gears etc. The snag for modellers is the price, around £18.00 including VAT for a 100g tube. Then there's Rocol Dry Moly Spray, a dry film of resin-bonded molybdenum disulphide retailing around a hefty £26.00 for the 400g aerosol.

Cost apart, the use of these high-quality 'dry' lubricants requires care allied with intelligence: you have to ensure that they're exactly where they should be (i.e. inside those plain axle bushes and around the axle bearing surfaces). The lubricant film must continuously support the weight of the loco and prevent adjacent metal bearing surfaces from actually touching when your pride and joy is doing a scale ninety with fourteen-on, or wear is the unpleasant consequence. For this reason, the paste type is probably best confined to gear teeth (where you can see to apply it), unless initial treatment is undertaken whilst the loco is being built, when everything is readily accessible. Further application to hard-to-access bearings may require periodic programmed strip-down and overhaul unless you are absolutely confident that the spray type has covered the bearing surface. This caveat applies to any 'dry' lubricant applied for a particular purpose.

ELECTRICAL WIPING CONTACTS

This is where I go for purpose-designed lubricants such as Electrolube Contact Treatment Oil (supplied in a handy pen-type dispenser) or the excellent RS Multipurpose Grease. Both maintain low contact resistance on all types of sliding and wiping contacts and reduce contamination by oxidation by-products. Again, apply just a thin film after pre-cleaning the contact area. These products help to maintain the surface finish quality of the pickups, because it is this which determines the amount of wear and thus the degree of contact resistance during operation. Surfaces which appear smooth to the naked eye are, in fact, composed of minute peaks and troughs and it is their high points which actually make electrical contact.

'A contact lubricant, properly used . . . sweetens operation of your locos almost as dramatically as the addition of extra pickups.'

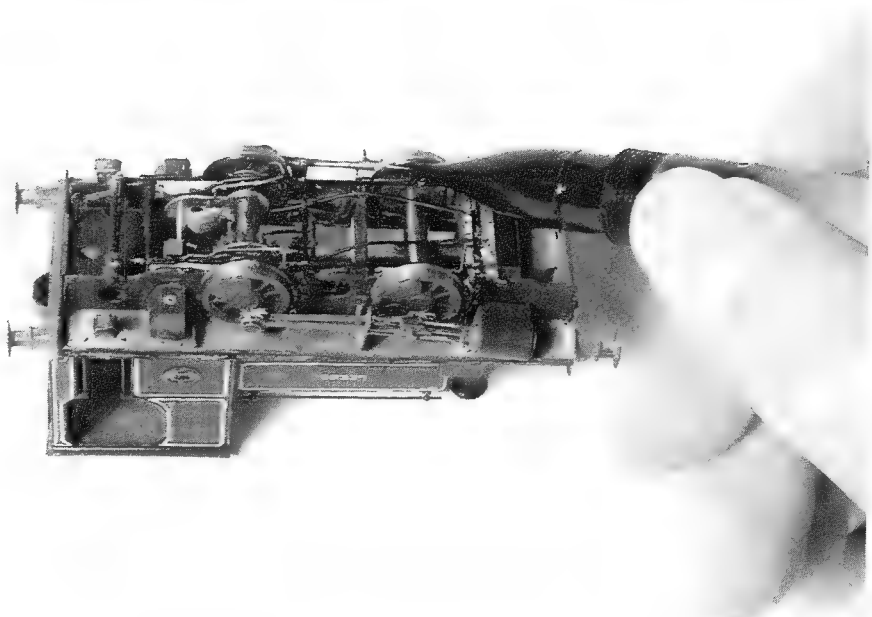
Microscopic debris from the abrading process of wear and tear collects in the troughs and thus accelerates the cycle. A contact lubricant, properly used, as opposed to cheap discount lubricating oil slurped all over the place, reduces contact oxidation and sweetens operation of your locos almost as dramatically as the addition of extra pickups. However, keep contact treatment oil away from plastics, from commutators and motor brushes!

We've all smelled the ozone and seen the discolouring effect of arc erosion on the backs of our wheels, caused by maladjusted pickup wipers! Now is the time to finely polish the damaged areas, perhaps under power, then clean off with Electrolube Contact Treatment Oil applied with a clean cotton bud. You'll be surprised how much contamination is liberated by this process! Then re-adjust the pickups and apply a fresh very thin film of Contact Treatment Oil.

Whilst we're at it, please don't use lubricants (or anything else) containing silicone on rotating electrical contacts. Silicone forms a very high contamination source and is converted by the temperatures inherent in arcing or fretting into hard crystals of silicone carbide: more wear and tear!

LOCO AXLE BEARINGS, WALSCHAERTS VALVE GEAR, ETC.

I reach for the faithful Seuthe 113 oil every time and add just a touch of Molyslip once the loco is nicely run-in. For the occasional plastic slidebar or piston rod on Walshaerts gear, Kadee 231 Greas-em is ideal. This is one of the very few areas where I use dry lubricants.



A tiny spot of Electrolube applied to wiper pick-ups will significantly enhance current collection.

BALLRACES

With the honoured exception of Dyna-Drive locos, few of these miniature precision items are found on the average model railway. Ten years of practical workshop and operating experience with Dyna-Drive, particularly with high-revving heavily loaded ballraces supporting shafts for 30mm × 40mm solid brass flywheels, has proved to me that Seuthe 113 Ultra Adhesive oil is the very best for our purposes.There are two high-cost alternatives but, for most of us, Seuthe 113 is the practical cost-effective answer.

CHAIN DRIVES

Beloved by the 7mm fraternity to ease the task of driving power bogie axles from a possibly remote-mounted motor, these are usually moulded in Delrin which is a self-lubricating plastic. Kadee Greas-em 231 dry lubricant will certainly do no harm, and I've used Seuthe 113 applied very sparingly.

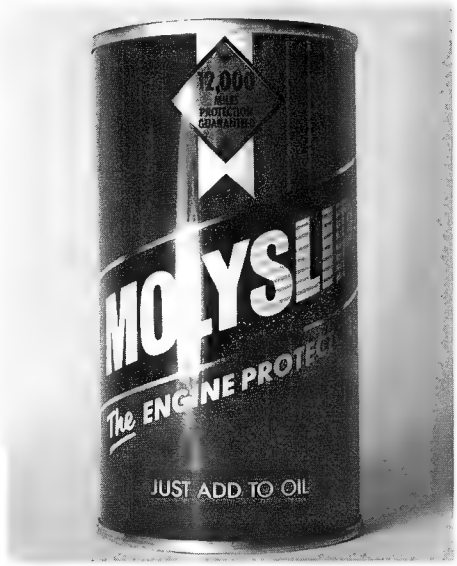
Some of us use metal chain drives (thanks, Meccano!) and for these, Rocol have the perfect answer in their Chain and Drive Spray (around £8.00 for a 300ml aerosol). This can be applied in a thin film, which reduces dirt pick-up but, most importantly for those operating and maintaining outdoor garden lines, it resists water and corrosion.

ENCLOSED GEARBOXES

Where the box uses metal-to-metal gears, clean thoroughly (RS 513–679 Cleaning Fluid) and re-grease with a molybdenum disulphide grease. This is really excellent stuff, and perfect for 7mm locos which have to transmit real grunt. For gearboxes with plastic-to-plastic gears or plastic-to-metal, use RS Components Multi-Purpose Grease.

SLIDING HORNBLOCKS

For those with the savvy and nous to fit these refinements, there comes the concomitant problem of how to keep them working to perfection. If anything's going to get plastered with gunge, these are prime candidates. From experience, there seems to be no easy answer. Kadee 231 Greas-em does a wonderful job and can be applied at installation. However, partial dismantling at F-exam stage for cleaning and re-lubrication seems to be the order of the day, because the lubricant used for the axle bearings themselves (Seuthe 113) does possess the habit of discreet migration into the sliding hornblocks. Then there are all the associated impedimenta such as beams and pivots for the compensated suspension …



Engine-grade Molyslip greatly reduces friction on metal-to-metal contact areas. Apply only when the bearing surfaces are well and truly bedded-in.

Perhaps you, like me, will take the easier route of using Seuthe 113 for axle bearings, with a tiny spot on sprung hornblocks and beams. Maybe we should accept that, as we humans tend to be an imperfect lot and dust and fluff tend to become gathered on our tracks and loco underframes, we should undertake a planned cleaning regime on our scale electric railways. London Transport have their army of underground fluffers to shift the day's accumulation from their 1:1 stuff; perchance we should use our vacuum cleaners? That raises the controversial subject of ballast, which is another matter.

ROLLING STOCK AXLE BEARINGS

Seuthe 113 is my first choice for both 4mm and 7mm, but Daywat model oil, applied sparingly, does a good job on lighter-weight 4mm stock. Metal-to-metal pinpoints benefit from the merest touch of Seuthe 113 plus Molyslip.

Plastic-to-plastic bearings? Kadee 231 Greas-em is a dry lubricant intended for Kadee couplers but has wider applications (tension-lock coupling pivots included).

P-WAY CONSIDERATIONS

Turnouts

Before we leave the subject of lubrication, spare a thought for your turnouts, single and double slips, plus the oft-neglected catch points. These all have sliding surfaces a-plenty (tie-bars and the elongated chairs which support the moving switch rails, for a start). Kadee 231 Greas-em is valuable here. And if your switch rails perform the function of switching traction power as well as flanges, then a discreet burnish of the contact faces and subsequent application of a very thin film (and I do mean thin) of Electrolube Contact Treatment Oil will truly work wonders.

Now I know that this is MRJ, wherein we're all supposed to be hand-building our own turnouts to suit their location, but this is an imperfect world where spare time is at a premium. Guilty, m'lud. At exhibitions, you'll have noticed that I use Peco Streamline Code 100X and their excellent Electrofrog turnouts for display purposes. Those little contact tabs on the lower edge of the Peco switch rails should be kept well adjusted and are ideal candidates for a tiny occasional touch of Electrolube Contact Treatment Oil; similarly the fishplated joints which act as pivots for the switch rails.

SOLENOIDS AND SLIDING ELECTRICAL CONTACTS

The sliding solenoids in Peco, Seep and other turnout motors benefit from careful application of Kadee 231 Greas-em dry lubricant. Likewise, the motorised 'slow' type turnout actuators work better, given a touch of the appropriate lubricant. Auxiliary electrical switching contacts, such as the sliding type found on Seep turnout motors, have enhanced long-term reliability when lubricated with Electrolube Contact Treatment Oil. If the motor is already fitted beneath the baseboard, application via clean cotton bud is one method which prevents Isaac Newton's well-known gravity from promoting white shirt sleeve contamination syndrome.

LOCO SERVICING

"What's that?" I hear you cry from beneath the sump drain plug of your beloved Lamborghini. A cautionary tale – pull up a chair and sit down …

In the halcyon days before property developers from The Smoke appeared, northerners beat a path to my then Northallerton priest-hole. *Multum in parvo*, many said. One day a clever sort of bloke, in blue jeans, checked shirt and designer stubble stood near my counter, loco and tender in hand (description changed, to protect the innocent).

"Not paying your prices for loco servicing!" quoth he. "The sparkie at our works can slip me a can of switch cleaner, unofficial, like. Liquid Pickfords, that stuff: shifts anything." Dismissing polite caveats with a cynical sneer, tight-fisted man exited downstairs.

Two sunrises later, the blue jeans ambled less nonchalantly into my emporium at lunchtime. "Errrm, looka that for me, will yer, mate?" I looked. The original black 9F (the one with the Type 1 Ringfield motor which almost pulled tree roots out, thanks to its six traction tyres) now sagged like a mass of glutinous misshapen clag, to which sundry bits of unspeakable grot clung in terminal embrace. Even the cylinders and some of the insulated bushes on the locomotive's driving wheels had been destroyed. "My lad will ruddy well marmalize me if it isn't running tonight," blue jeans man lamented.

In those days, the original black 9F bodies and tender tops could not be obtained for love nor money. Hornby couldn't help, nor Blackwells or indeed the veritable Aladdin's cave of goodies at Modelspares, but luckily I still had the original-pattern tender underframes in stock. What had, two days previously, been a much-prized collector's piece prior to over-enthusiastic squirt-it-everywhere application of the wrong type of switch cleaner, now succumbed to carefully wielded hacksaw and other rude workshop implements. Thus, after careful stripping, meticulous cleaning and rebuilding, yet another *Evening Star*, albeit a superbly controllable and powerful example, took to the rails.

At seventeen-fifteen hours, we amicably parted company after a sum substantially higher than my modest overhaul charge was exchanged. The moral? Use switch cleaners and solvents with care and read what it says on the tin! Test the product on a piece of scrap plastic of the same type if you are even remotely unsure of solvent or other chemical attack. The safer alternative is RS Components 513–679 Cleaning Fluid, which restores our miniature mechanisms to their former pristine glory with the aid of a cotton bud or three and tender loving care. This product is flammable and should not be used on mechanisms under power. Equally, it should only be used under conditions of proper ventilation. Afterwards, carefully re-lubricate and normal sweet running is restored to the locomotive mechanism.

Three of the most popular lubricants for the discerning modeller are Seuthe 113, RS general-purpose grease (applied by syringe) and Electrolube contact treatment oil, which comes in its own pen-type dispenser.

And finally ...

It may come as a surprise to some modellers that the lubricants which I use and recommend are non-conductive, including the contact treatment oil. Therefore, to promote the efficient operation of our locomotives, additional pickups are advisable. These can bear upon the backs of wheels, upon axles or, if one is really pushed for space and concealment is possible, upon flanges or wheel treads, although the latter can be defeated by accumulations of gunge.

The combination of additional pickups, and an intelligent maintenance and lubrication regime will ensure that you are, in the words of a legal acquaintance, three-thirds of the way there.

May your nuts and bolts stay tight, and your gears and wheels keep turning. Reliably, safely and, above all, quietly.

We asked some of MRJ's friends and contributors to tell us what lubricants they use to provide an optimum quality of running ...

Malcolm Mitchell

I use a variety of oils and greases in my modelling work that through the years have proved themselves to be reliable. I still have an ancient jar of 'Walkers' model railway oil that is excellent for general lubrication, especially small bearings with close tolerances as it has good penetrating properties and is harmless to plastics. It says 'Use sparingly' on the label and after 25+ years I reckon I've done exactly what it says on the tin!

Clock and watch oils from horological suppliers such as Walshes and Southerns have also been used with very good results, with Longines synthetic watch oil with it's anti-gumming and non-corrosive properties coming out as one of the best, together with Apollo superfine clock oil. For my 7mm loco-bearings and crank pins I now tend to use Myford lathe oil (Esso Nuto H32) which I find just right for easy fitting clearances and I have a large pot of it! For worms and gears I use a white PTFE light grease sold by Tamiya (called 'Ceramic grease') for radio control car use as it stays put without flying off all over the place and is again safe near plastics.

Tony Reynalds

For gearboxes I generally use a colloidal graphite, but for other lubricating purposes I favour watchmakers oil – Microtime F-type available from H S Walsh & Sons Ltd in London, being just one of those available. Incidentally, readers may not be aware that Portescap RG4 & 7 motor gearboxes have a standing shelf life of about two years before the lubricants used start to harden and the gearboxes become stiff. Often modellers assume the gearbox is faulty when it only needs to be stripped down, thoroughly cleaned and re-lubricated. They should then run quite freely again.

Alistair Rolfe

Bearing surfaces are lapped/polished during construction. Before painting, working parts are run in for 5–10 minutes, 'lubricated' with Brasso from a well-shaken tin. The chassis is then dismantled and thoroughly cleaned with white spirit to ensure all Brasso is removed.

After painting, all moving parts are lubricated with the oil supplied by Marten Richter, previously as 'Walkers' and 'Daywat', and now (I believe) as 'MR Products'. This is safe on plastics, and doesn't seem to damage paint – either enamel or cellulose.

On occasion I need something thick for a loco being overhauled for someone else, e.g. for a Romford gear set or a noisy RG4, which won't respond to the usual treatments. In this case I use a graphite-filled grease – Rocol MTS 1000. I am not sure how safe it is with all paints and plastics, but haven't yet had any problems. Products to avoid, at least in a model railway context, are 3-in-1, which dissolves plastics and paints, and WD40 which finds its way onto commutators and turns carbon brushes into mush.

Tim Shackleton
For years I've used Seuthe Ultra-Adhesive oil for all applications involving metal contact areas – hornblocks, crankpin bushes, valve gear, motor bearings. I lubricate gearboxes with Pronatur, a high-quality plastics-compatible grease from Exactoscale (Tri-Flow is much the same thing). Although Delrin gears are commonly assumed to be self-lubricating, I find performance is enhanced by a dab of this stuff. RTR motor bogie mechanisms may benefit from a controlled squirt of X-Lube, available from cycle shops.

Allan Sibley
For all modelling applications I use Castrol GTX decanted from a gallon can I bought about 20 years ago, when I had a car of sufficient age to need topping up. It should last me the rest of my life. It works, so why change?

Tony Sissons
I use Nye lubricant at each friction area. This is a fortified perfluoropolyether grease, available to me in my professional capacity as an engineer. It's employed in delicate mechanisms on board the Space Shuttle as well as in cameras, computer drives, dental drills, CAT scan equipment and prophylactic limbs. It functions in a temperature range of –40°C through to +125°C. The only snag is, a 4 oz tube (the size eye ointment generally comes in) doesn't leave much change out of £200. That's a lot of cans of 3-in-1.

Martyn Welch
I prefer a simple sewing machine oil and I'm also using Tri-Flow, which contains Teflon. This seems fairly universal in its application and I've found it frees up sticky axles in bearings and makes a good general lubricant. Like me, my bottle's going a bit thick now, but it's still working well.

SOURCES

Daywat Model Oil: Available through Knightwing Products stockists.

Electrolube Contact Treatment Oil (fluid pen, 5ml):
Formil Model Engineering, 12 Oak Tree Close, Bedale, North Yorkshire DL 1UG.
Telephone 01677 424686.
Maplins (ask for FM77J)
Peco stockists (ask for PL-64)
RS Components (via radio & television servicing dealers)
(Minimum order of five may apply locally unless it is a normal stock item) or by post from:
Electromail, PO Box 33, Corby, Northants NN17 3EL. Telephone 01536 204555.
(Minimum order and post and packing charge per order to Electromail.)

Kadee 231 Greas-em:
M G Sharp Models, 712 Atterdiffe Road, Sheffield S9 3RP. Telephone 0114 244 0851/7120 Fax 0114 244 0434.

Molyslip (300g tin); **Molyslip Gearbox Protection** (65ml syringe); **Molyslip Grease** (500g container).
Halfords, motor accessory shops, automotive bearing suppliers etc.

Polyethylene syringes (empty) for greases:
Formil Model Engineering (details as above)
RS Components (via radio & television servicing dealers). 0.033in metal tips sold separately.
(Minimum order often may apply locally unless it is a normal stock item) or by post from Electromail, as above (minimum order).
Squires Model and Craft Tools, The Old Corn Store, Chessels Farm, Hoe Lane, Bognor Regis, West Sussex PO22 8NW.
Telephone/fax 01243 587009

Rocol Dry Moly Paste
Formil (to special order only); Automotive bearing specialists; motorfactors.

Rocol Dry Moly Spray
Automotive bearing specialists; motor factors.

Rocol MTS 1000 molybdenum disulphide grease (500g tin); **Sapphire High Temp 2**, or **Sapphire High Speed 2 greases:**
Automotive bearing specialists; motor factors.

RS Cleaning Fluid 513–679 (400ml aerosol)
RS Components (via radio and television servicing dealers)
(Note that there are postal restrictions on aerosols, and they cannot be air-lifted. Formil stocks this product and exhibits at York and Carshalton & Sutton MRC (Leatherhead) shows. Maplins supply **Electrolube Ultrasolve** degreasing solvent in 200ml (DM9OX)and 400ml (FC3 OH) aerosols, plus a one litre bulk pack (FC29G). Ultrasolve is stated to be harmless to plastics, elastomers and surface coatings, but check on those delicate paint and weathering finishes prior to full use, just in case ...)

RS Multipurpose Grease 556-446 (50ml tube)
Formil Model Engineering (details as above).
RS Components (via radio & television servicing dealers)
(Minimum order of five may apply locally unless it is a normal stock item at the dealer).
Or from Electromail (detail as above; minimum order may apply).

Seuthe 113 Ultra Adhesive Oil
Formil Model Engineering (details as above).
Model Masters, 50a Clifton Road, Weston-Super-Mare, Somerset BS23 1BW.
Telephone 01934 629717; fax 01934 620946.

The Original 3-in-1 Oil Tanker

Starting with a Slater's 7mm kit, PETE JARY indulged in a bit of tank busting to get what he wanted . . .

Trying something different is in my nature, so when seeing an odd-looking tank wagon, I was immediately transfixed. That *would* be different, I thought, for it was the original 3-in-1 oil tanker, comprising three separate tank compartments in one container. Shell-Mex, as far as I'm able to find out, had at least three: Nos. 1219, 1222 and SM2545 — the latter renumbered and re-coloured after the war. I think 1219 and 1222 had red tanks with white lettering on a black frame. SM2545 was by now displaying a yellow tank and supports with red lettering and numbering plus a 'fast traffic' 2ft star displayed in black (showing up better than white) on a yellow background.

The modelled tank wagon had, at one end position only, a semi-rotary pump. This can be clearly seen in the photograph of 1222, together with its own handle. The support brackets for the pump are of a backward '7' design, whereas later, on SM2545, they are 'L' shaped. No doubt this was changed due to damage at an earlier stage in its life. Of note, the later model SM2545 supports a tool box below the pump housing, between the tank stanchions, whereas the earlier models do not. Interestingly, the brake arrangements differ from the standard wagon, insomuch as each of these vehicles had only one pull rod at each end, pulling from a centre cross shaft to the triangular yokes on the brake blocks at either end (this was classed as fast traffic!).

I've tried to copy the prototype, in this case SM2545, as closely as possible. Now I know the prototype is classed as 20 tons and I've used a Slater's 14 ton tank body, but it's the nearest I'm going to get with a bit of licence. The rivet counters amongst you please read something else (I look forward to the letters page in future issues).

Before the tank is assembled, take the top third of the tank body (this is identified as the part with the centre section of the tank plating riveted a third of the way down the side) and initially drill three holes 3/16in diameter (4.5mm) along the centre line 38.75mm between each other (see *Photo 1*). Get this correct because if you miscalculate, the tank restraining bands will not fit in between the edge of the filler hatch collars. Then drill a further three holes for the vents 13mm from each filler hatch hole (see *Photo 1* for positioning of same).

Construction of the tank follows the usual pattern. Make the tank body only, as per the kit, eliminating all join marks with the aid of body putty and fine emery paper. This will take you about three days — time enough for each application of putty to dry and be sanded down. Try to ensure that the surface detailed rivets are not sanded away from the tank plating and ends.

After the body is cemented together, the hatches and vents are stuck into the

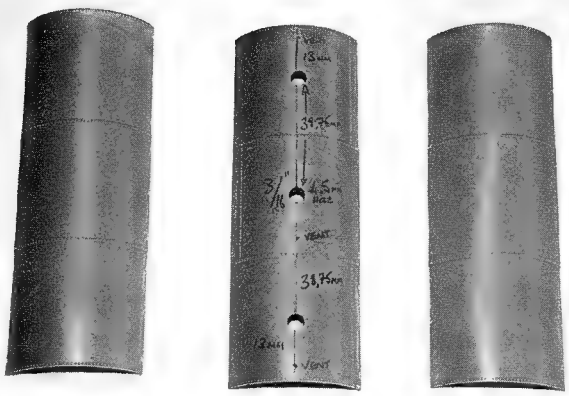


Photo 1

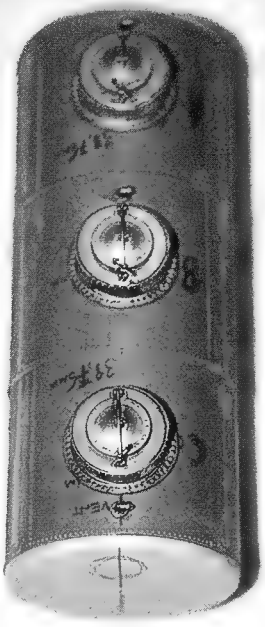


Photo 2

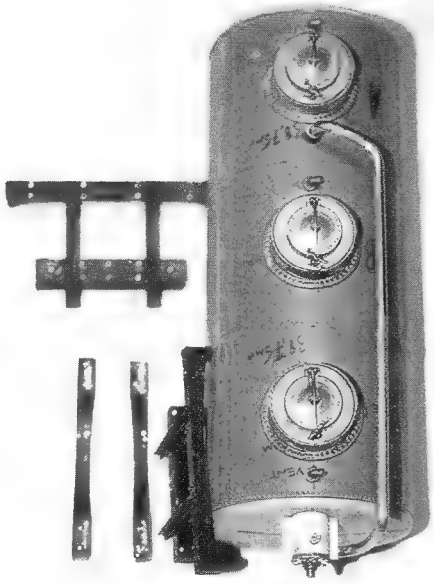


Photo 3

Photo 4

holes previously prepared for them – A, B and C. I used cyanoacrylate. The extra two hatches can be obtained from Slater's for a small nominal sum and come complete with vents and various valves which can be put to good use later. Note also that the vents face one way only. This is to the left, if the front of the tank is where the pump is positioned (see *Photo 2*).

Now mark out where the pump should go. This is centred 9mm from the top of the tank rim and is made up from scrap plastic tube, a 9mm deep cylinder of 8.2mm diameter with an 8.5mm lip around the front facing. Eight vanes are made from scrap plastic and cemented on in a concentric pattern. The 'L' supports again are of scrap plastic and detailed rivets are done with 0.94mm pin heads in holes drilled out with 0.45mm drills.

If the earlier model is made, the pump supports are inverted '7's. The top vent to the pump is made from the kit's original cut short, which can then be positioned under the tank bottom. Drill a further hole at each end of the tank top, at the very edge, to accommodate the lifting lugs. These can be represented by small split pins.

Now for the tricky bits – namely the pipe, valves and flanges. The feed pipe is of brass, 2.6mm O/D, and is best bent to shape with a smaller rod inside it to help prevent kinks in the bends forming. You will need a pipe at least 110mm long and this is bent as per *Photo 3* (N.B. please leave sufficient space for the anchor strap which is positioned between the collar of the filler hatch and the pipe outlet itself).

Four flanges need to be placed at the base orifice of each pipe end and can be obtained from a very useful set of universal pipe fittings marketed by Knightwing (Code UN3) which includes valves, joints, saddles, plus various pipes of varied diameters and bends. Intended for the 4mm market, they come in useful for the industrial scene in many scales.

The overlays on the feed pipe are made by simply cutting small lengths of brass pipe of a larger diameter which fit snugly over the 2.6mm o/d main feed pipe. Washers should be bored out to fit as flanges at the end of these larger overlaid pipes. Valves (three) are again bits and pieces with brass-wheeled handles, available from various traders, added to the tops of the valves. This can

be seen in *Photo 4* and in the prototype photograph.

Brake gear, as mentioned earlier, is of a single truss rod and triangular yoke typically found on many vacuum-type brake assemblies, and both Slater's and ABS supply these parts.

Finally, the tool box which sits between the stanchions under the pump (this is omitted if the earlier version is modelled) is made quite simply from 0.5mm Plastikard 2.5mm deep, 14.40mm long, 4.5mm in height with a 0.5mm lid.

Further embellishing of rivet detail on the stanchion units, if required, is accomplished with 0.94mm pin heads requiring a 0.45mm drill.

It's worth painting and weathering the cylinder at this stage, together with the transfer application, before the tank is set in its cradle and lashed down. Finish the remainder as per the kit and hopefully, you now have a truly unique tank wagon.

Sources

Photographic references can be obtained from *Petroleum Rail Tank Wagons of Britain* by R. Tourret (Tourret Publishing) and *Oil on the Rails* by A. Coppin (HMRS).

Transfers:
POW Sides (lettering)
Fox Transfers (black star FRH 7930)

Bits & Pieces:
Knightwing, 1 Wood Street, Huddersfield, West Yorkshire.

Pins:
D. J. Hornsby, 25 Manwood Avenue, Canterbury, Kent, CT2 7AH.

Misc.

The last paragraph of your editorial in MRJ No. 132 reminded me of an event that took place some 33 years ago, lasted for about half a minute at the most, but has stayed firmly in my memory ever since.

At about 11 p.m. on a Friday evening in 1968 I was waiting on the eastbound Met/Circle platform at Great Portland Street for a train to Liverpool Street. There were perhaps 50 or 60 other souls on both platforms. All were, like me, occasionally glancing at the blank train indicators, then their watches, and mentally visualising their onward connections being lost.

Gradually we became aware of an unfamiliar noise from the Euston Square direction, a distant rumble which might have heralded an earthquake. Some were visibly worried while others, maintaining the British 'stiff upper lip', tried to look unconcerned. For my part I wondered, and indeed hoped, it would be what I wanted it to be – and it was!

Suddenly there burst upon the scene one of the ex-GWR pannier tanks, hurrying a train of track panels and ballast from Neasden to somewhere east. The noise was deafening in the confines of the station tunnel, the smell of smoke and hot oil pungent in the extreme. And then it was gone as suddenly as it had arrived – the flickering oil tail-lamp on the brake van being visible for a few seconds.

I always thought that the steam-hauled works trains never ran through the cut-and-cover sections during 'normal' traffic hours, but on this occasion one did. What was remarkable was the differing reactions of my fellow travellers, most of whom would not have seen a steam train in several years. Some were clearly in fear, some seemed not to believe what they had just seen, one or two had beaming smiles, and some – incredibly – just carried on reading their evening papers right the way through it, as if this was just another everyday experience!

Then 'CIRCLE LINE' came up on the indicator. Those for stations to Liverpool Street took another look at their watches and gathered their belongings, those for Whitechapel and beyond sighed in frustration. A further gust of fume-laden air entered the station as the train pushed the remains of the pannier tank's exhaust ahead of it, then all was back to normal. It was an unforgettable experience.

Allan Sibley
March
Cambridgeshire

We couldn't find a picture of Great Portland Street Station but we have got this atmospheric view of LT 0–4–4T L47 at Whitechapel on 30th October 1938. MILEPOST 92½

ROYE ENGLAND's Modelling Notebooks

Edited by Stephen Williams **PART 9 – PLANTS AND FLOWERS**

In this penultimate set of extracts from Roye England's modelling notes, we focus upon one of the most remarkable of his skills and perhaps the facet of his modelling that attracts the most attention and admiration from the general visitors to Pendon – his ability to model plants and flowers. Here, perhaps, we find the ultimate expression of his skill in observing the real world; in developing – by experimentation – ways of capturing the qualities of real plants in miniature; and the painstaking application of those methods to produce miniature gardens of unrivalled finesse.

However, not all his miniature plants were modelled exactly. Where the plant itself offered little in the way of a distinctive structure, more impressionistic approaches could be used to effect. Here is a short description of how he modelled clumps of small white flowers – the species not being recorded – for the front garden of Middlecot in the Chapel Group.

The plants were cut with small scissors from 'Flexopad' – an off-white kind of latex sponge rubber. Each piece was then further shaped by pulling out very tiny pieces with tweezers, with considerably more bushes being made than were necessary, to provide a good choice of shape. All inner crevices of the sponge were then painted using a mixture of Terre Verte and less each of Viridian Green and Aurora Yellow. Paint takes quite well on sponge rubber. When quite dry, the bushes were gone over on all outer surfaces of the sponge with two rich coats of Chinese White unblended, to provide the impression of the covering of small white flowers.

This very basic approach is easily replicated and it is still widely used for modelling nondescript (or small plants) at Pendon today. We have, however, abandoned the use of sponge rubber which time has shown becomes impossibly brittle with age. Roye's real skills came to the fore when he modelled plants with a distinctive structure or shape. This is his description, more or less in full, of how he modelled the Clematis jackmanii *that trails over the porch of Middlecot.*

Two books were obtained as a guide to form, colour and habits of this particular clematis – *The Large and Small Flowered Clematis* by Ernest Markham (from Didcot Library) and *Shrubs and Trees* by G. R. Jackman and F. A. Bush (from Abingdon Library). The latter gave a coloured frontispiece of Clematis *jackmanii* which was invaluable. The difficulty, of course, is that modelling has to be done at seasons when the flowers being modelled are not visible, and when they are in bloom the pressures of other work prevents any modelmaking. *(This model was made during the period that Roye ran the Long Wittenham Youth Hostel and his modelling was largely confined to winter months when the hostel was either closed or relatively quiet.)*

Leaves were cut from greaseproof paper. A small section was ruled to make a bank of triangles, with horizontal lines 2½mm apart and the dots to mark the apex of the triangles 2mm apart. *(A tiny sketch – as shown in Fig. 1 is then included to show the arrangement.)* They were then cut into strips along the horizontal lines, but before being separated, the base of each of the triangles in the strip had a V-shaped cut made in it with a craft blade. This produced the following. *(A second sketch – Fig. 2, is shown.)* The individual triangles were then separated and a similar V-cut made in the two remaining sides. This gave the impression of leaves set in threes, thus. *(Fig. 3)*

The illustration of *jackmanii* suggested dull, brownish-green leaves and about a third of the total number of 280 leaf units were coloured with Terre Verte and a little each of Burnt Umber and Raw Sienna. It was then found that the leaves should be a much brighter green, so Viridian green and a little Aurora Yellow were added to the same blend, the amount of Aurora Yellow being increased in several stages to give a variety of colours. A main pool of paint was made and the leaves were picked up with an 0 brush and dipped one by one into it and submerged completely. Each was then placed as lightly as possible onto a sheet of white paper to dry. After about five had been done, each was carefully moved to prevent sticking. After a further five were coloured and moved, the first five were moved again – and so on – until each had dried. As a general rule, smaller leaves were coloured lighter than the older, larger ones.

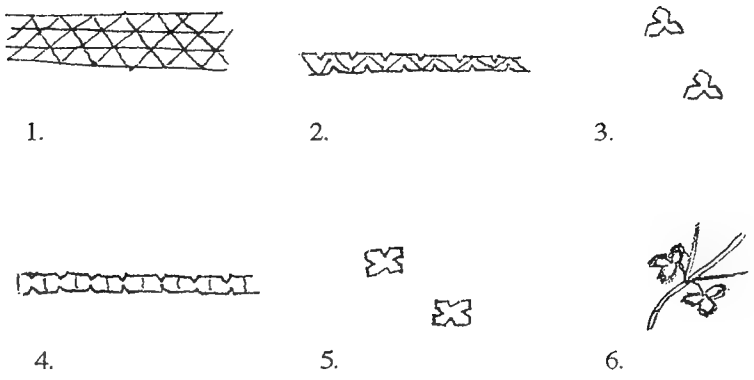
Flowers were cut in a similar fashion, in this case from banks of squares measuring 1¾mm each. A strip of squares was separated and a V-cut made into the top and bottom edge of each square *(Fig. 4)*, as was done in making the leaves. The squares were then separated with scissors and similar V-cuts made in the remaining sides, producing a basic flower shape *(Fig. 5)*. Variety of size was needed, but seemed to happen of its own accord.

Colouring was done by dipping in the same way as the leaves. A fairly red-purple colour was needed to give the right effect, using a basic blend of Rose Madder with less Cadmium Red and a little Chinese White. Some flowers were painted darker than others, though using the same basic blend.

Stems were cut from Coates's cotton, using 36 grade for the main stems and 100 grade for the lesser ones. They were made deliberately too long, immersed completely in a pool of Burnt Sienna, Burnt Umber and a little Chinese White, and then left to dry.

Assembly was started with three lengths of the thicker cotton which were glued to the ground and taken over the top of the porch. The stems were not stuck in any place, either to the walls or the porch, in case they proved unsatisfactory and needed removing, but the watercolour on the cotton made it stiff enough to keep its shape and to position without trouble. The stems of *jackmanii* have a joint every four or five inches, from each of which a straight shoot grows on either side, becoming in due course a thinner stem. There is a triple leaf below each of these shoots, thus: *(Fig. 6)*. The thinner stems were therefore taken from the thicker ones following this principle as far as possible. They multiply so greatly that there must be a considerable number of stems in the upper part of the creeper. In this case, 31 thinner stems were eventually attached with Durofix.

Leaves were next added on either side of each stem junction and in pairs, at intervals, to correspond with the positions of joints and generally at the tip of each stem. Each was cupped using the point of the tweezers working against the finger, before fixing. Leaves were attached to a tiny spot of Durofix with tweezers, but great care had to be used not to let the Durofix touch the tweezers, or the leaf would come away on them every time. Out of the 280 leaf units made, 200 were used and towards the end there was only just enough choice of shape and colour.



Thumbnail sketches by Roye of the stages in producing the Clematis jackmanii.

Flowers do not generally start until several feet above the ground and the tendency of the plant is to flower high. There should be a great profusion of blooms standing out well from the leaves. Each flower was given a touch of Durofix on its back or on the stem or leaves which were to receive it, and placed with the tweezers after having been cupped to give it shape. After setting the blooms, 51 in all being used, each was given a white centre with an 0 brush dipped very lightly into a rich mixture of Chinese White and a very little Aurora Yellow, to form a creamy-white. If any went onto the petals it was removed as far as possible with a damp brush and then painted out with the purple blend.

The final model that Roye completed for Pendon – a pair of large timber-framed houses from Steventon known as 'The Priory and Godfreys' also featured a remarkable piece of vegetation modelling – an extensive Virginia Creeper. Although almost 80 years old when he undertook the work, the plant was modelled with the same painstaking attention to detail that characterised the clematis made over 35 years earlier. Readers will note, too, how the materials used have altered in this late example, with Kleenex tissues and PVA adhesive replacing the greaseproof paper and Durofix. Here is Roye's description.

For the green, a variety of blends was made but in the end a mix of Oxide of Chromium, Viridian Green, Aurora Yellow, Burnt Umber, Chrome Orange and a little Charcoal Grey was found to be best. A sheet of double ply Kleenex tissue was painted with different areas coloured from different parts of the pool of paint, which gave an unexpected variety of shades. However, all dried too dull and dead, so the sheet was given an all-over coat of wet Aurora Yellow. Two further sheets were also prepared with some of the original blend, one with much more Aurora Yellow and the other with varying amounts of Chrome Orange and Bright Red added to the basic blend and further washes of a mix of Aurora Yellow and Viridian Green which really brought the colour to life.

The leaves were cut by Stuart Johnson with a punch specially made by him, and although all were produced from the same punch, they varied considerably in size and shape. This proved an enormous advantage, especially as the varying shape almost always retained the character of Virginia leaves. Further variety was evident in the colouring because of the way in which the density of the paint on the Kleenex had been varied, and the blends changed slightly on different sheets.

Stems were made from thick white string used whole at the base but with the strands unwound and separated higher up the plant. These were painted with Burnt Umber, Charcoal Grey and a little Chinese White and were stuck in place with the usual PVA. They were intended to show only in one or two places, but they gave added body, or luxuriance, when the leaves were put over them. However, so as not to show as sudden bulges, lengths of greyish-brown linen thread were added to provide subsidiary stems that helped to hold the leaves away from the wall and giving the appearance of their being on stems.

The leaves were laid from the bottom working upwards, so each was able to overlap the one below. Using a fine 00 brush, a spot of PVA was placed on a stem or on the wall. The brush was then wiped with a Kleenex, then quickly dipped into water, and then lightly wiped again to leave it moist. The next leaf (which was already selected for shape and colour) was picked up by the moist tip of the brush and transferred to the waiting spot of PVA. Exact positioning was done with the point of fine tweezers or sometimes with the point of a Swann Morton blade.

The first batch of leaves from Stuart numbered about 550 and when about 300 of these had been placed it was realised that a lot more would be needed. To match the colour precisely would be extremely difficult, so the remaining 250 were kept back to mix with subsequent batches, to make a gradual transition rather than a noticeable hard line. The final batches of leaves were not a perfect match but they were acceptable as they gave variety and helped to produce upper leaves of a lighter colour than the lower ones. What was important was that the general tone of all blends was a comparable one throughout the plant.

In the final selection of extracts, we will look at some of Roye's modelling of scenery and its detail.

NEW SOLDERING UNIT
continued from page 50

between them and squeeze them together, they will hold, but it is only surface tension keeping them there.

A good solder joint requires an inter-metallic bond which is created at 30°C above the melt point. This bond is a new material that is created by the chemical reaction between the mating parts in connection with solder and the correct temperature, and needs to be there to give both strength, and where required, electrical continuity. But in itself it is a crystalline structure and as such is weak, and therefore needs to be as small as possible to provide maximum strength (0.5 micro approx. 1/10 of a human hair). The irony is that this bond material grows with both time and temperature, so too much temperature for too long will produce too much crystalline bond material and again you have a weak joint.

Maybe now you can start to see why controlling temperature at your iron is critical in aiding you to produce not only a good joint but to create it easily. Too little temperature results in no inter-metallic bond, whilst too much temperature will produce too much bond material and a risk of tin lead separation – or in some cases the melting of parent materials being joined.

How do we know when we have created a good solder joint? Well, we can't monitor the temperature of the joint, that's for sure, and thankfully we don't need to, because the second you see the solder flow freely across both mating parts, and at the point that the whole joint area in contact with your solder tip goes bright, shiny and smooth, you have achieved the near perfect solder joint. If to get this flow you are having to hold your iron on any area of approximately 6mm square for more than two seconds, either the temperature is too low, the solder tip is contaminated or your iron is not capable of maintaining a good working temperature. If after soldering, your joint is rough or grainy, the likelihood is that your tip is far too hot. If it is dull but smooth, then it has not completely flowed, will not have a good bond and therefore requires more heat.

So how can we achieve good reliable consistent solder joint quality?

- You need to solder at as low a temperature as you can to produce this smooth shiny joint quickly.
- You need a solder station that can control and maintain an accurate tip temperature to within 10°C.
- You need solder tips that stay clean and that do not require filing at all.

ERSA have been providing hand soldering solutions to industry for over eighty years, their solder stations incorporate triple-plated tips that, when fitted, completely encapsulate the heating element which in turn can only provide heat to the tip, not to the air. A vast range of tips enable easy soldering of parts no matter what size, shape or complexity. Its measurement of temperature is taken at the tip, which in most cases is less than 2mm away from the working tip, thus giving incredible reaction time. In addition the ceramic elements are capable of providing a 290watt heat-up rate. Tip heat-up rate is typically 8 to 20 seconds depending on tip and tool type, and can be maintained to within 2°C. Settable temperatures range between 150°C and 450°C, which takes account of low-melt solders for whitemetal and high-melt solders for more specialist use. All base stations have a lifetime guarantee, and elements two years.

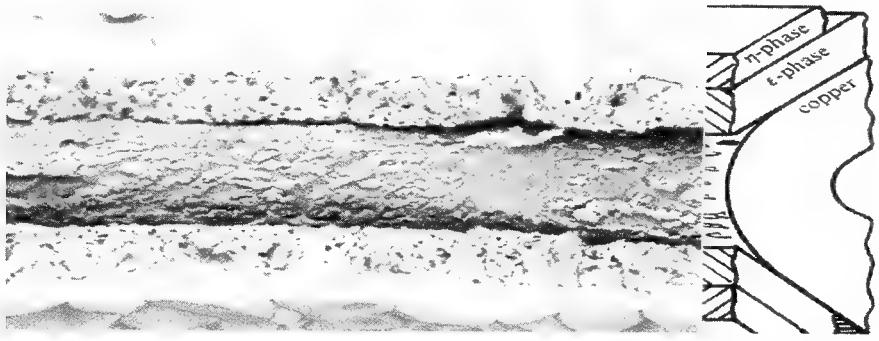
REVIEWER'S VERDICT

Well, that explains the technical gubbins for those who enjoy such information, but this reviewer is merely content to know the soldering station works when it's switched on and that it solders item one to item two easily. It is sturdily made and the main units are heavier than my old Antex unit, so less inclined to move about the work area or fall onto the floor. I found it simple to use and personally feel it would be an excellent addition to any serious modeller's workbench at a pretty fair and competitive price.

To misquote a well-known phrase from a television commercial: "It does what it says on the box". Well, you can't say fairer than that.

SUPPLIERS

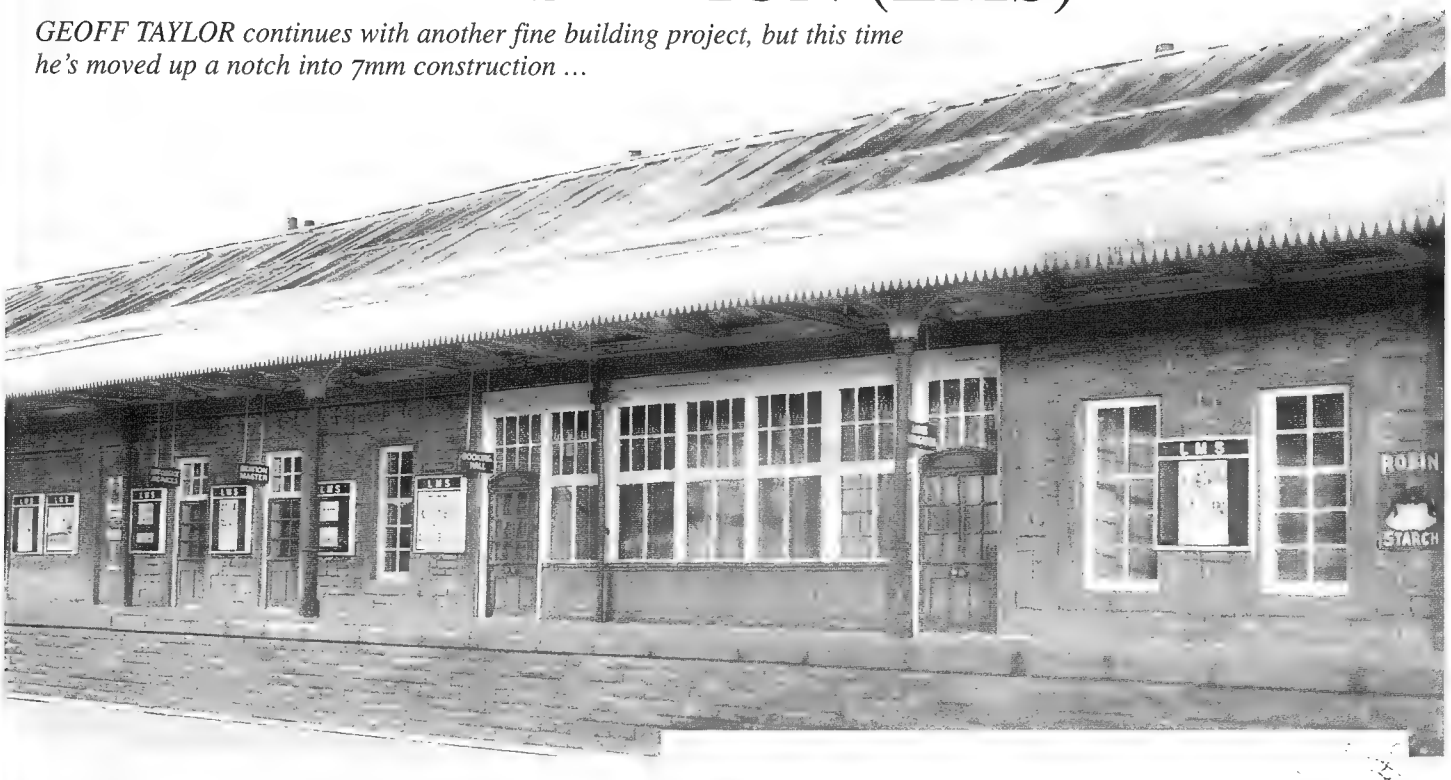
Most industrial high-quality solder stations start at around £300. The ANA80A is an analogue system normally sold complete at £190.90, but exclusively to the model railway enthusiast, Peter Dobson of NEWBOLD MODELS is selling this unit complete and delivered for £110. The digital version, which allows many different Ersa hand tools to be plugged in and provides a digital tip temperature display normally costing £227.27, Peter sells for £210 complete and delivered. If you have any further queries about soldering techniques or the Ersa equipment, or you have a model build requirement, Peter will be only too pleased to help at: 57 Desford Road, Newbold Verdon, Leicestershire, LE9 9LG (01455 823767) or E-mail: *peterd@modelrail.net*



A section through a solder joint showing an electron microscope image of the inter-metallic bond material created between a copper component and solder. The solder itself has been etched away to show the crystalline structure of the n-phase.

KILMACOLM STATION (LMS)

GEOFF TAYLOR continues with another fine building project, but this time he's moved up a notch into 7mm construction ...



For interest, I thought I would start this article with a short history of the station. The Scottish station of Kilmacolm was opened in 1869 and to be found on the former Glasgow and South Western Railway line from Glasgow St. Enoch to Greenock Princess Pier, about 17 miles from Glasgow. In the Grouping of the railways in 1923, Kilmacolm station came under the vast LMS company, which lasted right up to the end of 1947, after which the railways of Britain became nationalised. It saw a few changes to its general appearance over the years, the main ones being the addition of the long glass-roofed canopies on both platforms, and a small toilet block with extension wall which abutted the main building. But, like so many other stations around the country towards the end of the steam era, decline set in and the canopies and toilet block were removed.

The line was eventually closed in 1982, but the main building was not demolished and still exists today as a pub, which has retained quite a few of the original features. Unfortunately the lovely natural colour of the sandstone has been painted over, but at least all is not completely lost forever. The main entrance building and platform base walls on the up side were built of sandstone, with the toilet block and extension wall being constructed of brick. On the down side, the long wall and the waiting room were also brick whilst the glass canopies covered about half of the platform lengths.

INFORMATION

The period in the station's history chosen for the model was to be LMS around 1930. It was also going to be modelled complete with platforms and canopies. As with all commissions, before any start on the model could be made, I needed as much information as possible, so I made general outline measurements of the building, including the window and door sizes. Photographs of the pub, taken from different angles, were sent to me and a six foot measuring pole, with painted foot sections on it, was put against the walls of the building and included in each photograph, greatly assisting the working out of any other measurements needed. I also received various other old photographs of the station, one of which was a colour print of the sandstone building.

From all this information I was able to make sketches and work out any extra measurements required. Walls, which included the window and door sizes, were drawn up and a reduced scale plan of the length of the whole project was done. Even though the actual station was not that big, it was going to be a rather large

structure when modelled in 7mm scale, so I made a rough cardboard mock-up with details drawn, just to get the feel of it. Each canopy length is actually 105cms long and for the non-metrics among us that's about 3ft 6ins! With all the details finalised, I could then start to think of the best way to construct the model.

CONSTRUCTION BEGINS

MDF board was chosen as the basic material for most of the building work as it could be easily cut and sanded, and when braced it became strong as well. A start was made on the main building by marking a sheet with all window and door measurements, allowing also for the height of the platforms to be added onto the bottom of the building. Measurements were carefully checked before I could start cutting out the apertures in the MDF. On the platform side would be the waiting room with its long section of glass panels and a door at either end, so for now a suitable gap was left in the MDF for this to be made and put in place at a later stage

The main walls, which now had all their window and doors cut out, could be stuck together at each corner using white PVA woodworking glue, and formers that followed the roof angle were then glued across the width for added strength. I added small lengths of square softwood in the corners and also along the sides of the roof formers, all of which made a good firm structure on which to build up the rest later.

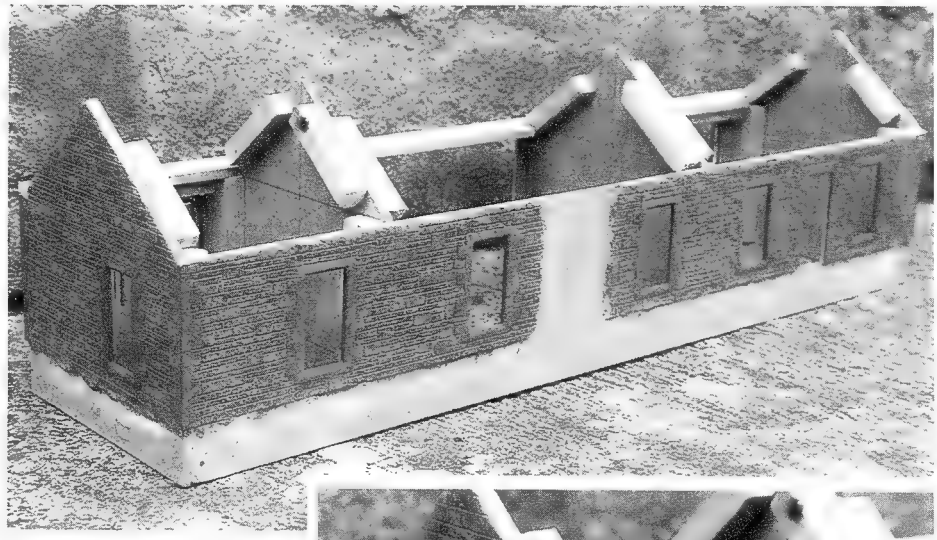
Some of the most distinctive features of the building were the window and door surrounds made from large bevel-edged sandstone blocks. A full-size plan of a window was drawn out on paper, which I then copied out again, only this time on 30thou plastic sheet. I intended making a mould of a window and then casting the surrounds instead of making each one up individually. The middle part was cut out and all pencil lines scored to represent each stone. Another layer was cemented to the back to give some depth and filed to match. Using a file and fine sandpaper, I bevelled the inner sides to match the original, noting that the bottom sill bevel was larger. One further thick layer was fixed onto the back but didn't go right to the outside edges of the stones. This left the outer parts hanging in mid-air so that the modelling clay, which was going to be spread onto the walls, would go underneath these surrounds when fixed in place.

The finished window surround had to be made into a mould now, so it was cemented in position on a piece of 30 thou plastic sheet, and 10mm high walls were put in place round the four sides leaving a 5mm gap between the sides and the finished surround. Liquid rubber poured into this created a mould ready for casting. Using liquid rubber is a rather messy job and it takes a long time to set, so I always make sure that I have other jobs to be going on with. Once the rubber was set, I could then cast the required number of window surrounds using resin which, unlike the rubber, sets very rapidly.

For the door surrounds, as there were only three of them, I made each one up separately from plastic sheet and scored the stones, building up the layers as for the window. The building also had large corner stones which I similarly cut from plastic sheet and made in strips, each stone being cut to shape and scored. The insides of these were also scored, so that they could be bent round the wall and given a second layer. All these different surrounds I glued in place on the MDF walls with impact adhesive and they stood proud of the wall by about two millimetres..

To model the sandstone wall, I chose DAS modelling clay, a ready-mixed clay that dries off gradually after being exposed to the air. It really is easy to work with and gives a good result in the end. A thin coat of PVA was put on a section of wall at a time and the DAS then applied by pressing a largish piece of it down on the glue and trying to get a reasonable level. This was gradually worked in along the wall and under all the window, door and corner stones until I had built up to the level of the stones. Once completed, it was left for a few days to harden.

The scoring of the individual stones could be attempted now and for this I used



Early stages with the DAS modelling clay fixed, scored and painted.

Close-up showing corner stones and window surrounds. Note extra roof supports.

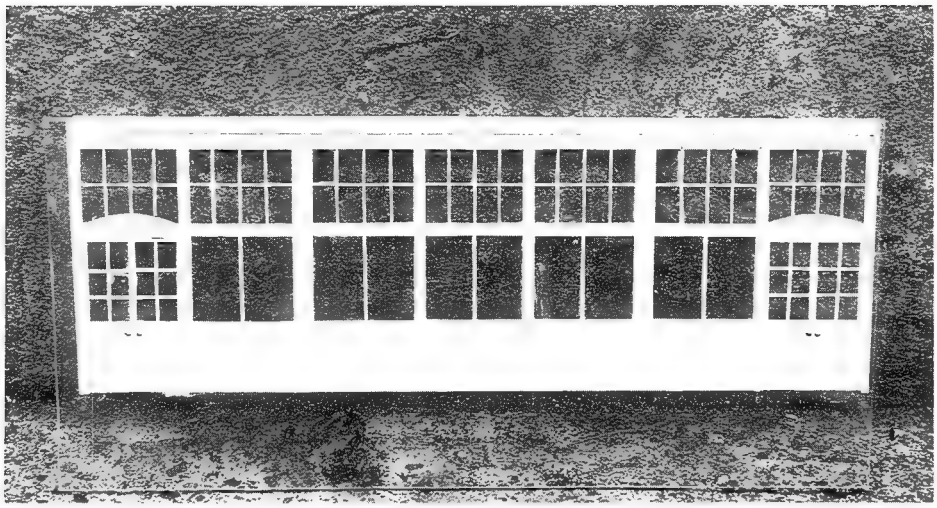
a scorer and metal rule, all the while studying photographs of the real building to try to get more or less the same result on the model. After a few stones were scored, I used an old toothbrush to brush away the waste powder from the courses, which in turn actually rounded the stones off slightly. A final very light rubbing with fine sandpaper was carried out over all the finished stones and final cleaning up, before any painting could be started.

PAINTING BY NUMBERS

For the majority of my models I use Humbrol paints and thinners, mainly because they mix together well and seem to be available in most model shops, so are easy to come by. For the sandstone walls I painted on slightly thinned-down No.62 (matt leather) with a fairly large brush and left this to dry. The second coat was made up of No.62 and No.170 (brown) which were put onto a piece of scrap card and mixed randomly when I needed more paint as I went along the walls. All was left to dry overnight and a very diluted wash of matt black was applied over the individual stones, some more than others, to finish off. This transformed the walls greatly.

Window frames with separate bottom sashes were drawn up as artwork on my computer, from which brass etches could be made. All were sprayed with primer before being painted with Humbrol cream. I chose clear acetate sheet for the glazing, fixed behind the frames with impact adhesive, but the main waiting room windows were made entirely differently using strip and sheet plastic. A full-size plan was drawn on paper and a piece of clear acrylic sheet (the sort used for greenhouse glazing or secondary glazing and sold in DIY stores) was laid over the top of the plan. It was cut 5mm wider on both ends, to permit gluing in behind the walls, and extra deep on the base to allow for the height of the platform. I taped the sheet over the paper plan and work started on building up the overlays in plastic sheet and strip. I generally use Mek-Pak liquid polystyrene cement, but to cement the plastic to the acrylic I used Plastic Weld as this is a more powerful adhesive.

Various sizes of Microstrip were employed to build up the framing, resembling the original, and the curved tops over the two doorways came from strip gently bent round to shape. Plastic sheet was scored for the wood panelling on the base. Door handles are pins cut down and glued in appropriate holes. It took some time to achieve the building up of the layers and cutting the glazing bars, but then I had to start all over again! The waiting room on the other platform had an identical glass frontage, so another one had to be made. To stop any warping of the acrylic sheet, pieces of plastic strip and sheet were also cemented on the back. Acrylic sheet will warp quite badly if this is not done, so it is better to do this straight away rather than leave it for a few days. Doors on the rest of the main building were also done with the acrylic sheet method, but the big drawback of this is the extra time taken to carefully paint each part of the frame without getting any on the glazing.



The large windows/doors section of the waiting room on acrylic sheet backing.

Extension wall with gents' toilet, before the canopy was made.

AN EXTENSION

The wall extension, with a small toilet block building behind, was next. This wall, which supported some of the canopy, adjoined the main building and ended where the canopy finished. Built of brick with brick pillars, it included the open entrance to the gents' toilet and had a small room with glass panels plus a door. Two sheets of MDF were marked out and cut, then glued together. I cut plastic 7mm brick sheet and glued this to the base and pillars, whilst the top parts were made from overlays of 30thou sheet with brick sheet glued on them. A gap in the wall was left, allowing for the small room, built in the same way from acrylic sheet and plastic overlays, to be glued in

place when ready. The gents' entrance had a raised archway all round, cut from sheet and scribed, with an inside wall going round the corner.

I painted all bricks on the extension and toilet block in No.93 (light stone), plus a few similar shades of No.121 and No.71 with No.170 (brown) being used sparingly over the top. A very light sanding with fine emery finished off the wall.

TOP OF THE BUILDING

Four chimneys were needed for the main building and one for the toilet block, and these I constructed using lengths of softwood with 30thou sheet glued on as a base. A sheet overlay was scribed up with stones to resemble the original and cemented in place on the stacks, cutting into the courses as they went round each corner after they had dried. These stacks were then glued onto the inside walls and middle formers of the building.

I made a start on the roof next and cut a base from MDF, glued this over the formers, then taped it down with large elastic bands to hold everything in place. The toilet block roof was also done at the same time. A sheet of 30thou plastic was glued down over this, so that I had a good base on which to cement the slates. Two skylights in the main roof and one on the toilet block would be required, so these were measured, marked out on the roof bases and painted matt black. The actual skylights came from plastic strips with small pieces of sheet and acetate for the glazing, which was painted both sides with matt varnish. Slates on the photographs were approximately measured and then a grid drawn up on 10thou plastic sheet. Basically, these slates are long strips of two rows in height with the bottom row being scored down each pencil line representing each slate. Starting on the bottom edge of the roof, I cemented down the rows, with the next row overlapping the first by one slate depth, so gradually working up to the top of the roof. It was a very time-consuming job – especially as the main roof was rather large.

Ridge tiles for this main roof were lengths of sheet scored and bent over the tops of the slates with small lengths of strip cemented over at intervals. I represented the fancy ridge tiles on the toilet block by a length of 30 thou sheet scored and cut into a castellated pattern before being glued upright on top.

At the front entrance to the station building was a rather nice-looking small porch, so I fabricated this from the acrylic

Main waiting room now in place.

Front entrance porch with notice board inside.

sheet with strip overlays for the window frames, and sheet plastic that was scored for planking and fixed on the back wall. The base stonework of sandstone came from sheet with the individual stones scored and painted up as before.

I modelled the interior with wooden floorboards and two doors which were fixed in the open position. A notice board with timetables was attached to the opposite wall. Doors leading from the porch to the inside room are actually painted on, as you can't see too much when peering in, so they didn't need to be fully modelled. After the paint on the inside walls and floor had dried, a roof was made in a similar way as before. Considering its size, the roof was quite fiddly to make and after all the different pieces had been glued together, the porch made a nice little model in itself.

The rear of Platform 2 waiting room. Canopy now finished.

THE LONG BRICK WALL

This wall on platform two supported the canopy and had a waiting room near to one end making a large structure on its own, and was also modelled complete with platform surfaces. I built the wall in two sections because I had to leave a gap for the glass waiting room again and I chose two layers of MDF glued together. Brick sheet was stuck on and all pillars made with brick overlays. The waiting room back wall was also MDF but the two sides came from acrylic sheet once more, with overlays of strip and sheet, onto which I built up two curved-top window frames, then built and positioned a chimney stack along the back wall. Then everything was painted. Covering it was an MDF flat sloping roof, slated as before.

With most of the building parts done, I needed to attach the platforms to them and made a framework for each platform from 12mm × 21mm softwood and, using MDF once again, cut and stuck it onto the frames. Each building was glued and screwed to the framework before a top layer of 30thou plastic sheet was drawn up, complete with paving stones and edging stones and all lines being scored. Impact adhesive bonded it in place. Both platforms were done at the same time and the model looked more like a station at last.

The trouble now was that they were very long structures and took up a fair space in my workroom. I fixed stone plastic sheet to the base framework, taking care to join them together by cutting each stone course at the ends into a sort of jigsaw piece, so that they all interlocked. I have seen many models spoilt using straight butt joints and it doesn't look good. Top edging stones from strip were cut and scored to match up with the platform surface stones, then cemented in place.

With everything cleaned up, painting commenced and for the first coat I used No.140 (grey) for the paving stones, whilst the edging and facing stones were painted in No.62. After leaving to dry overnight, paving slabs were dry-brushed with No.121 (pale stone) and left to dry properly. To highlight them individually, I carefully brushed a diluted wash of matt black round each one and allowed this to run into the scored lines. This wash dries paler and transforms the rather flat grey surface. A further dry-brushing using Nos. 121 and 129 (grey) completed the painting.

Before the canopies could be started, more detail was added, such as pipes and notice boards as it would be a lot more difficult to add them afterwards. Rainwater downpipes are plastic rod, having a small piece of masking tape wrapped round at scale six foot intervals to represent the joints of the ironwork. They were fixed to the walls and painted brown. The large information and poster boards are sheet plastic with strip for the surrounds, and painted matt black with the edging in off-white. LMS lettering, complete with line under, was designed and printed on my computer and glued down on the boards. The colour posters started life as a large sheet of wrapping paper, which was reduced down and printed on the computer to the appropriate sizes. Any other timetables etc, were purchased commercial products.

CANOPIES AND BRACKETS

The next large job was the two long canopies for both platforms. I was sent some photocopies of the original engineering drawings of different parts of the canopy, so this greatly helped to get the model correct. I reduced some of these down on the computer to the exact size needed for 7mm scale. A lot of thought went into the making of these and, I must say, a few headaches as well!

Initially, a brass structure was envisaged and I bought a few lengths of different size brass rod and other bits to make the columns. A couple of columns were started and tried out, but I confess to not being very confident when it comes to soldering, so I gave up and decided to make the entire canopy in plastic, a material that I feel comfortable working with. I started by making the ten columns needed from hollow plastic tube, building up the layers to represent the original with different diameter tubes, cutting to fit and

cementing in place. A square hollow tube was cemented on the tops which, being similar to the real one, would be the base onto which to glue the decorative brackets. I drilled holes in the platform surfaces to accommodate the longer-than-needed columns and glued each one in place.

The main frame of the canopy was built up using laminated sheet and strip plastic until a strong girder-like structure materialised, linking each column and the tops of the walls together. Uprights and ridge girders were built up, followed by cross bracing and the angled girders which would support the glazing. Making an exact copy of all the girders wasn't necessary, as when in place on the layout most of them would not be seen. Once all the girders had been constructed for both canopies, they were painted cream and weathered, as it would be more difficult to reach these parts later when the glazing was added.

Amongst the original drawings was one of the column support brackets, so I drew one as artwork on my computer and had brass etches made. I needed a total of 36 brackets (the four end columns needing only three each), but by gluing two together for thickness, ended up having 72 of them. These were glued to the square tops of the columns, given a coat of primer, then painted cream and weathered. I have to say at this point, I was particularly pleased with the end result of the brackets, and they really make quite a difference.

Square guttering for the front of the canopy came from sheet plastic and strip painted matt black inside. Before any glazing could be added, the enamel room signs needed fixing in place. These were made from sheet plastic with two pieces of brass wire attached to the top, and then fixed to an extra girder that would sit between the wall top and the main centre girder. The signs were done as artwork on the computer and printed off in the G&SWR's original colour of dark blue enamel with off-white lettering (a lot of stations retained their original company signs well into the Grouping era and indeed some made it into Nationalisation). They were glued to the plastic backings with the edges painted to match the blue background, before the whole assembly was hung and bonded in place above the appropriate doors.

GLAZED OVER

Glazing is 1mm thick clear styrolux sheet, cut and cemented to the girders using Plastic Weld. Lengths of wide strip plastic

Canopy structure started with main girders and columns in place.

Canopy bracket.

were cemented on top of the glazing over the tops of the main girders, and the glazing bars and remainder of the top pieces were cut from strip and cemented individually in place. For anyone interested in statistics, there are 366 separate pieces of strip on top of the glazing of each canopy and that's not counting the ends or the gutters and awnings, and naturally they all had to be painted individually as well! After painting and weathering of the framework, the glazing was given a coat of matt varnish, and a diluted dirty wash of matt black was applied to both sides to give a well-weathered look.

The canopy valance was worked out from the photographs, drawn up as artwork on the computer and brass etches made. These were done in short sections and given a coat of primer before being glued to the backing base of the canopies, painted cream and weathered. The four ends were finished off by scribing the wood planking on the sheet plastic to the same dimensions as the valance, and cemented in place.

There were side entrances to both platforms, so I made awnings from scored sheet to be fixed above them, going between the wall and the ends of the canopies. All that the model needed now was the finishing touches. Flashing was made from paper, scored and bent to shape round the chimneystacks, where they met the roofline. A strip of paper bent over the canopy tops was glued on and painted to represent lead, and all finally weathered to finish the project.

CONCLUSION

This large model was an enjoyable one to make with its different buildings and the long canopies – well, perhaps one canopy would have been enough! It also took longer than anticipated. Now that the model has been delivered, the workroom looks quite empty at present, but plans are already under way for my next project. It will be featured on an exhibition layout already under construction, so I look forward to seeing it soon at one of the future shows.

If anyone is interested in seeing more of my models, perhaps they would care to visit my website at: *freespace.virgin.net/geoffandshar.taylor/gt.html*

Almost the whole length of the platform. Not a passenger in sight!

The canopy valance shows up well here.

Measurements and Scaling Drawings

If you are scratchbuilding locomotives or any other railway related object, it is useful to work from a good and reliable drawing. It makes life much easier. Photographs are vital as well, but from the drawing you can pick up the precise size of the components. If you have a good and reliable drawing of the scale you are working in, all very well, but what if you don't? Incidentally, do always, if possible, check the drawing against photographs. On more than one occasion I have spotted differences between what was drawn and what was built, but that's another story.

As long as the drawing you use has at least some dimensions marked on it, or you know some of the main dimensions, for example the wheelbase, working out all the other sizes is easy. Of course, any engineer will tell you, 'never scale from a drawing', and this is quite correct. However, we are merely trying to recreate an object in miniature, and we are not going to run into any dire problems or other issues that might have arisen if it were part of the International Space Station. In other words, and in more ways than one, keep things in proportion!

I have found the most convenient form to convert sizes is to work out a millimetre to 1 inch ratio. This is simple to do, all you need is a good clear rule, a calculator and a few minutes to double-check your calculations.

The process is as follows:

1. Measure a known large length on the drawing. Coupled wheelbase or overall length is good, but pick a length that is easily expressed in decimal numbers. For example, 17ft 0in (17.0ft) or 12ft 9in (12.75ft). If possible do not work with an awkward measurement (e.g. 32ft 7¾in). You can convert this to decimal notation if you wish, but I would rather look for an easier size to work on.

2. Once you have double-checked the measurement, divide the length (in mm) by its full size length (in feet). The result gives a number of millimetres per foot (mm/ft).

3. Divide the result (mm/ft) by 12. The result is an answer that gives us the number of millimetres that represents 1 inch on the drawing. We can then use this to obtain every other needed measurement from the drawing. If a straightforward number results from this process, for example, 2.73, use this but if it is 2.7345289333, cancel down to two or three places of decimals.

Let's work through an example:

1. Coupled wheelbase 8ft + 8ft 6in = 16ft 6in
2. Measurement of this length on the drawing is 258mm. Divided by 16ft 6in, e.g. 16.5ft = 15.636363 (mm/ft).
3. 15.636363 (mm/ft) divided by 12 = 1.3030302 (mm/inch).
4. Cancel down = 1.303 (mm/inch).

e.g. every inch on this drawing is represented by 1.303mm.

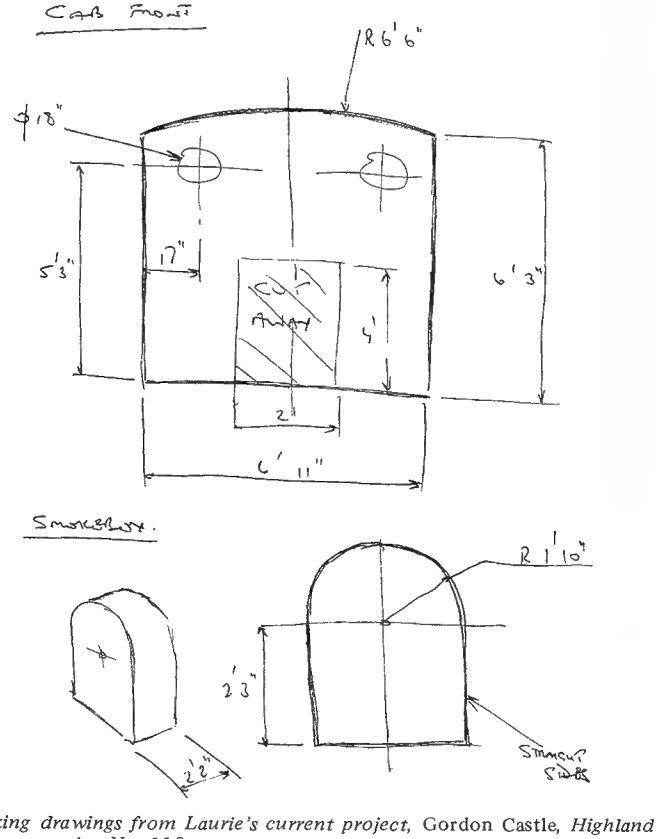
For all the measurements you need to get from the drawing, measure the length in mm and divide it by 1.303 (mm/inch). The resulting figure is the full-size measurement in inches. So a length on the drawing may measure 6.25mm (I tend to estimate to the nearest quarter of a millimetre by eye). Divided by 1.303 produces the result 4.7966231 on my calculator. This, to the nearest ¼in, is 4¾in on the full-size locomotive, or on my 7mm scale model 2.70mm.

It is worth taking a few minutes extra at each stage to check this calculation with several measurements on the drawing. Once you know it works reliably, you can set to work to measure up and transfer the results to metal. The old addage 'measure twice and cut once' applies very well.

Before actually marking out on metal sheet, I produce quite rough working sketches for parts I am making, just noting shapes and the full-size measurements as needed. To save recalculating these 'scale inch' measurements back into millimetres, I use a rule produced by CPL Products. These are made from stainless steel and are marked off in feet and inches and are available in most of the popular scales. Firstly, this saves you from a second calculation with its attendant risk of error; secondly and particularly in 7mm scale, it saves you from working almost constantly in awkward measurements (0.56mm = 1in, 4.66mm = 8in, to give but two examples).

Apart from saving yet another round of calculation and attendant risk of error, there is something very satisfying in working in the same unit of length that appears on the drawing you started with.

Laurie Griffin



Working drawings from Laurie's current project, Gordon Castle, *Highland Railways engine No. 118.*

A BRAKE WITH TRADITION

TIM SHACKLETON builds a 4mm kit from the Pocket Money range. It's cheap, accurate and convincing, even if the instructions show signs of cost-cutting:

If you choose to build a particular class of locomotive, however obscure, the chances are that at least two kit versions will be available from different manufacturers. I can't help thinking it odd, though, that if you wish to model the most common of all postwar goods brake vans, the BR standard 20T design, the choice until recently has been restricted to the plastic Airfix/Dapol kit of 1961 vintage and an assortment of dimensionally ropy RTR offerings.

I have a fair number of Airfix models in various liveries and incarnations, and the last time I built one I was aware that it didn't really cut the mustard any longer. OK, it's close to the drawings and it captures the essential nature of the beast, but a lot of the moulding is pretty heavy — no doubt to make it easier to assemble in younger hands — and while it can be rectified, it's awful hard work. When an etched kit recently became available in Connoisseur Models' Pocket Money range, I wandered how well it would compare with the familiar two-bob brake.

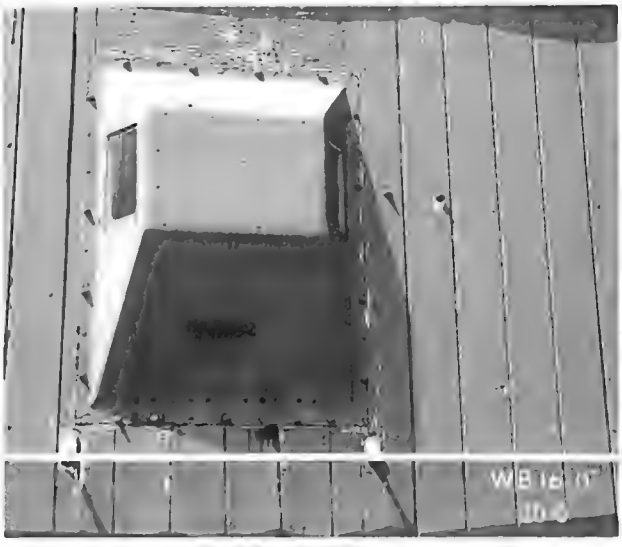
The short answer is that the finished model is in a different league in terms of accuracy, finesse and character. It knocks spots off my earlier Airfix-based efforts, especially when studied at close quarters. What I hadn't quite bargained for, however, was how dearly that quality was bought. This wasn't a matter of cost — in my book, £12.50 is a perfectly fair price to pay for an etched kit of a complicated prototype — but relates more to the degree of time and effort that was demanded in putting the basic shell of the model together. I've built enough brass kits by now to know how many beans make five but there were times when this one didn't seem to add up at all.

First, though, some prototype background to set things in context. A total of 3,582 of these vans (plus six for London Transport) was built between 1950 and 1961. Two diagram numbers were used. Diag 506 covers the first 2,855 examples,which were built at Faverdale Works in Darlington. Just under 900 of these (B950866–1115, 1716–2005 and 2166–515) were unfitted and painted grey. According to the lot book, the majority (B951516–715, 2006–165, 2516–715 and 3116–4520) were vacuum-fitted and carried bauxite livery. All the Diag 506 vans, fitted or unfitted, had oil axleboxes and RCH pattern buffers (with longer shanks, of course, on the fitted vans). Many at first carried wording indicating their regional allocation — LONDON MIDLAND, for example — but this practice was abandoned in the mid-1950s. Most were common user but some did carry branding for specific allocations or circuit diagrams.

The first lot of Diag 507 vans, numbered from B954521–997, was built at Faverdale in 1959 but the final batch (B954998–5247), along with the six LT vans, came from Ashford in 1961. The justification for the new diagram number was the changeover to through pipes (i.e. handbrake only, with no direct vacuum brake) and the use of roller bearing axleboxes and hydraulic buffers. A quantity of the earlier fitted vans was subsequently fitted with the improved bearings and/or hydraulic buffers of various patterns. These modifications constitute the main visible difference between batches, a lesser one being the shape and exact disposition of lamp irons, vacuum pipes (the tall pattern on early batches only) and verandah grab handles, which are in two sections on the vans built before 1952. I am not sure if any unfitted brake vans were later adapted to vacuum brake (as a great many general merchandise vans and open wagons were in BR days) but the reverse certainly happened, with some vans — particularly those that were transferred to departmental use — losing their piped/fitted status but retaining bauxite livery; many also acquired instanter couplings instead of screw-pattern. Following accident damage or to facilitate repairs to rotting timbers, some or all of the panelling on the ends (and less commonly the sides, above the duckets) could be found sheeted over.

A further modification in the Speedlink era was to fit air-brake valves to a number of Standard 20T vans. These variants, TOPS code CAR, normally had large yellow panels on the sides and ends and were stencilled 'AIR PIPED'. Latterly, however, the only services on which a brake van was used — apart from engineer's trains — were those conveying

B953867, built in 1958 to lot number 3129, was one of the final dia 506 vans, retro-fitted with the roller bearings and hydraulic buffers that became standard with dia 507. The ends have been repanelled.



Details of B951771, built unfitted in 1952 but later converted to through pipe and painted bauxite.

volatile materials such as acids and explosives. The last of the 20T brake vans in revenue service were those on nuclear flask trains to and from Sellafield, but the formal requirement for a brake van was rescinded in 1996, some 30 years after it no longer became mandatory to have a brake van on a fully-fitted freight train. This brought to an end the tradition of having an on-board guard or brakesman that goes back to the era of the chaldron wagon.

For the sake of completeness, I might just add that the BR Standard vans were developed from the LNER 'Green Arrow' design which was perpetuated in BR days, with over a thousand — all of them vacuum-fitted — being completed between 1950 and 1955. Numbered B950250–539, 616–865, 1116–515 and 2718–3115, they were virtually identical to the BR-designed vans apart from the high vacuum pipe, the shorter stepboards and the lack of handrails and concrete ballast blocks on the end platforms.

I mention these details here because — save for a muddled attempt to identify the fitted and unfitted vans, which also manages to lump two batches of LNER-designed brakes in with the BR variety — the Connoisseur kit is silent on prototype data, although it includes a passable set of scale drawings. From the high-grade whitemetal castings provided we can deduce that the kit represents the later Diag 506 vacuum-fitted version with oil axleboxes and long-shank RCH buffers, although neither vacuum brake gear nor alternative parts to accommodate any other variations in detail are provided. With a dim notion that these vans had twin brake cylinders, I used the LNER pattern available from ABS. The subsequent variants of axlebox and buffer can be easily modelled using replacement components from MJT.

I had a long way to go, though, before I could think about the finer details. The production quality of the etchings looked encouragingly high but the instructions were poor indeed, never venturing beyond the 'fit parts 1 and 2 to 3' school of elucidation. A good set of instructions — I think in particular of those provided by Dave Bradwell and Pete McParlin — doesn't just tell you what to do, but how to do it. These are two entirely different concepts, though most of the people who write kit instructions fail to realise it.

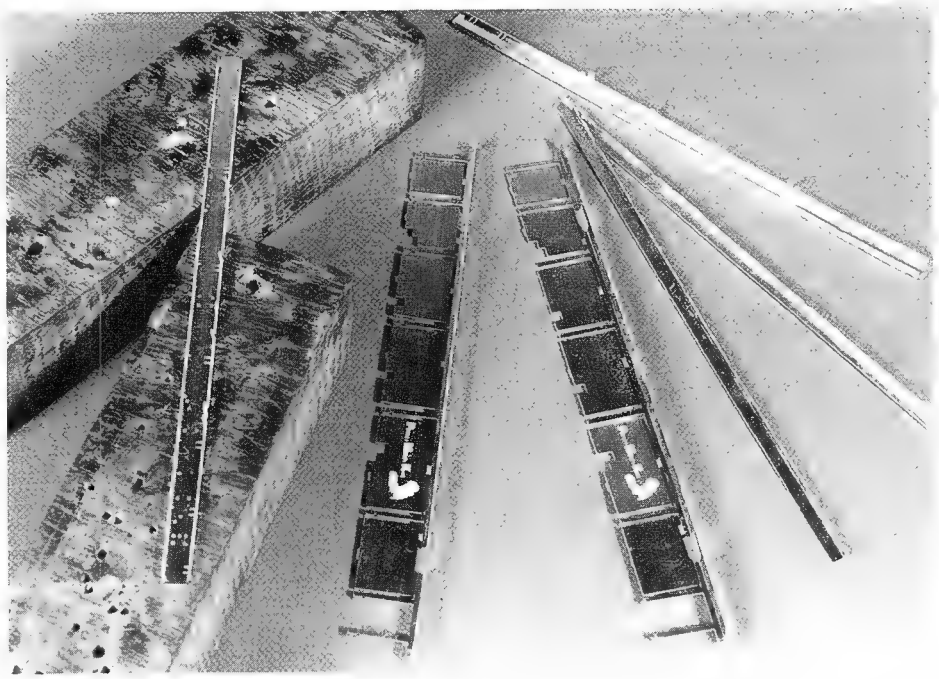
Not wishing to be wise after the event, I gave the etch a good looking-over to try and anticipate possible difficulties, and then, by and large, went my own way. There is a whole page of instruction on elementary soldering technique but not a word in the step-by-step section on folding up the solebars and footboards, which is far and away the most difficult part of the assembly sequence. Actually it did briefly say, in the general preface four pages earlier, that the builder 'will need bending bars for long folds' but that's all. I don't suppose everyone knows what bending bars are, and what you might do if you haven't got any. I folded up the footboards by cutting them from the fret with as much as possible of the surrounding section of etch still in place. Then I clamped them in the vice between two pieces of oak, so that just the thinnest of edges was showing along the half-etched line, and turned the step over with firm and uniform pressure along the length of a steel straight-edge.

Forming the U-channels of the solebars was more tricky, and I didn't think that 'fold top and bottom edge 90°' was quite the full story. Relieving slots would have made life easier but at least these solebars had half-etched fold lines, unlike the ones on those awful old Jidenco kits which caused me so much trouble when I first started working in etched brass. I made the first right-angle bend as before and got the second started with a tweak from some very long-nosed pliers. Then I put the solebar face-down in the vice, checking that everything was square and parallel before gently tightening up, which persuaded the second bend to form itself. Another and perhaps easier way of forming solebars is to clamp them up in the vice around square brass bar of suitable dimensions, but I'd put a lot of rivet detail on to these before folding — I don't think it could be done afterwards — and I felt the pressure would have flattened it.

I couldn't fault the neatness of the artwork but good draughtsmanship isn't the same as good design. I got the impression that, while there was obvious concern for accuracy, precious little thought had been given to how this kit should go together. I really didn't get on with the vagueness of these assembly processes and yet the curious thing is that I had no need, as far as I can recall, to modify any of the parts in any way. They are accurately drawn and etched and the fit was as precise as one could wish, but finding the best way of joining them together was not always obvious. 'As this kit has been designed for O gauge,' the instructions try, rather desperately, to explain, 'you may find the approach to construction different from most kits that are designed specifically for OO gauge', a statement whose meaning I am still trying to grasp.

The absence of any reliable datum line when assembling the main bodywork was particularly questionable. A one-piece, fold-up, open-topped box is no great problem whether it's a wagon body or a gearbox, but here the sides, ends and solebars come as separate pieces. There is no floor as such, nor spacers of any kind other than the inner and outer van ends which are butt-jointed to the sides. Without orthodox cross-members, it is not possible — or it didn't seem to me to be possible — to assemble the chassis and bodywork separately. The whole thing needs to be put together in one hit and if the modellers at whom this kit is targeted need entry-level instruction on soldering technique, I wonder why it's assumed they can put six main body sections together square and level without any designed-in aids or even a word or two of advice on how to make sure everything is correctly aligned in the various dimensions?

Where major components are concerned, the general absence of positive locators is irritating. Unless great care is taken with setting up the bodywork parts ready for soldering (I used dead-square blocks of wood to hold them in place), it would be easy to end up with a lop-



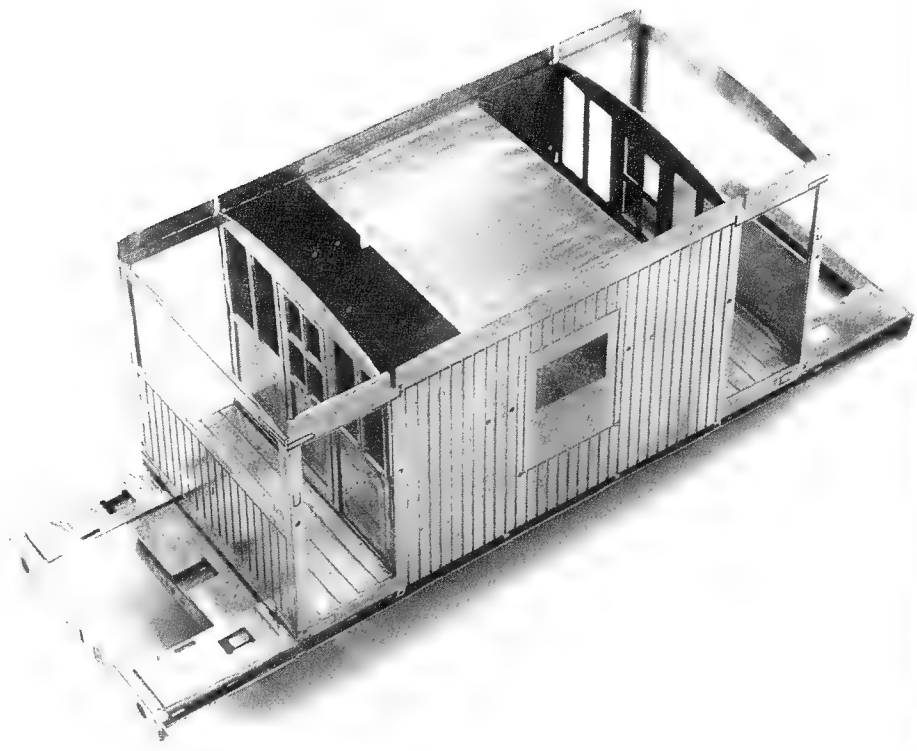
Forming the solebars and stepboards was no sinecure, at least without bending bars. I clamped them between the two blocks of oak seen on the left, with as much as possible of the surrounding fret still in place (see the steps in the centre). Firm pressure with a straight edge created a 90° bend. I did the first bend on the solebars the same way, started the second bend with pliers and then squeezed it gently in a vice.

sided van that runs very strangely. Slots and tabs are not hard to provide in an etched kit — I can't think why so few were used here. Quite apart from the business of squareness, I felt that the sides would tend to bow with handling, so I made an inner floor and a dummy roof from rectangles of 10-thou brass, which helped achieve the necessary rigidity; they could, just as easily, have been there to begin with, or perhaps this was something else it was assumed the modeller would improvise. The wheels are intended to run in whitemetal spring/axlebox units that are soldered or glued to the solebars — again without any locating tabs or what have you — so here we have another opportunity to drift well out of square. 'Check axles are parallel' say the instructions. How? say I. And what do you do if they're not? 'Adjust until wagon sits without rocking' is the answer, apparently. Adjust what? we might innocently enquire. I was using an MJT inside-bearing compensation unit, but I think the point needs to be made. The castings, incidentally, need to be thinned down for P4 — and perhaps EM as well — or they will foul the wheelsets.

As I hope the photographs demonstrate, this kit has the potential to be made up into a very fine-looking model but, my goodness, things could be difficult for the inexperienced modeller. If the kit were branded, however subtly, as a purely finescale effort then I think I could tolerate the things it takes for granted, because one understands intuitively that some modicum of skill and/or improvisation may be called for. But the name 'Pocket Money Kits' and the legend 'OO gauge' (not 'OO/EM/P4', or even '4mm scale') is unashamedly pitching things at the popular end of the market. These are the guys who are going to very quickly get stuck, because they simply don't have the experience or the technique to get themselves out of trouble.

Be this as it may, what was beginning to emerge as work progressed was a very good representation of a BR Standard brake van. Like the steps and solebars, the windows in the inner ends are one of the key features of the prototype and the etched parts really do the business here far better than Airfix's lumpen plastic mouldings. Once we pass the basic box stage and get busy with the detail overlays, then everything is plain sailing and the difference in class between a twelve-quid etched kit and a two-bob plastic model really does begin to make itself felt. The pattern makers who worked on the injection-moulded kits of the 1950s and 1960s were no mugs, but the gradual accumulation of fine etched detail exposes the essential chunkiness of Airfix's effort.

Some of the rivet strips and other details are very small and I was pleased to note that, in most cases, a few spares were provided — other manufacturers please copy. After the vague location of the major components, the fiddly bits were well signposted, including some handy dimples to act as drill starts for the handrails with which the 20T brakes were liberally furnished. Fixing these, not to mention a few dozen assorted overlays, is the ideal kind of work for a resistance soldering unit and I used one throughout the assembly sequence, only turning to a conventional iron to add some beefing-up fillets at critically stressed points of the assembly.

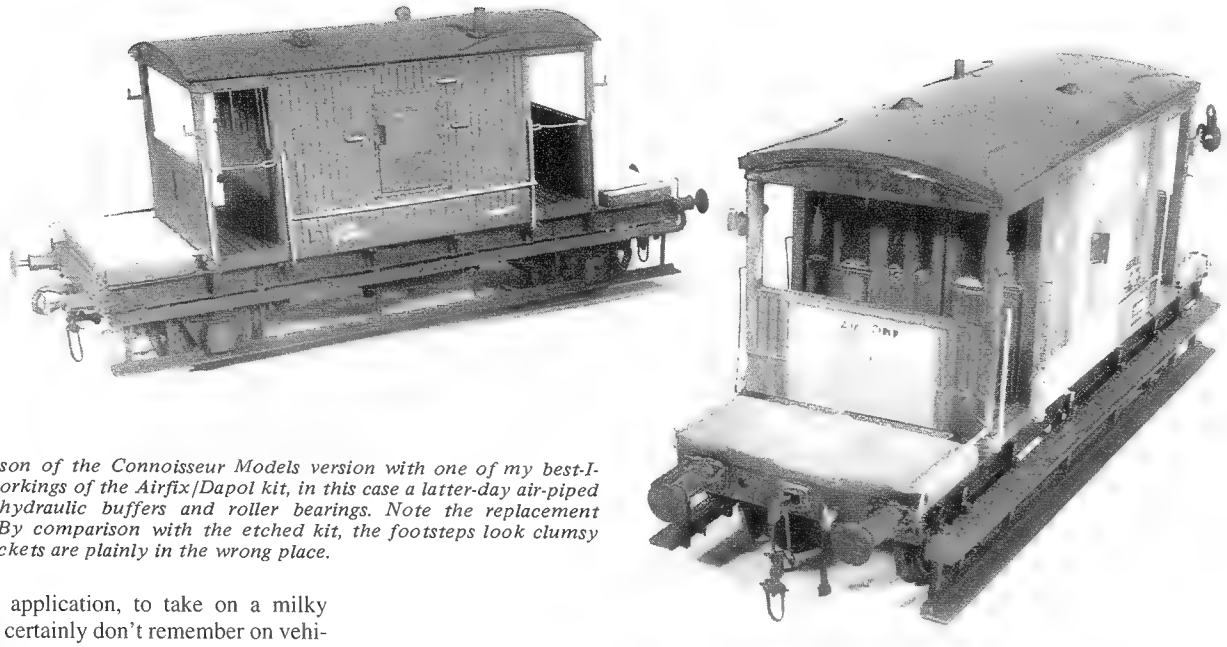


The quality of the etchings is first class, but the lack of a continuous floor piece, or even any positive locaters, means that considerable care has to be taken to get the main body components square. It's butt joints all the way here, which is not good practice. To true things up, I added my own floor and the prominent bracing piece at roof level.

The final run-in was as straightforward as the start had been sticky. The rain strips ('make from soft wire') are best produced by repeatedly drawing a length of .33mm wire between the fingers until it assumes a curve — or, more probably, a gentle spiral — of approximately 1½in diameter. Appropriate lengths can then be snipped off and soldered into place on the preformed brass roof before being filed flat. The castings for the roof fittings, duckets and buffer-beam detail are excellent, although the buffer rams — being of scale dimensions — are delicate and I was glad of the couple of spares provided. The whitemetal adds welcome weight to the model but I also used lead sheet to bring the total weight up to 85g. Lightweight, loose-coupled freight stock with pinpoint bearings has a tendency to surge when in motion, and while this was also true of the prototype, the effect is much exaggerated in 4mm scale. A nice heavy brake van helps to calm things down and also prevents stock running away while shunting is in progress.

I made Plastikard infills for the outer ends but the temptation to create a fully-fitted interior was easy to resist. Though it would have made a nice photo, and I had plenty of reference material, it would only have been clearly visible at very close quarters — the kind of distance at which my eye is more readily drawn to dust flecks in the paintwork, crooked lettering and other avoidable distractions. I decided to skip it, and watched some cricket instead.

There's not much to be said about painting a van such as this — or is there? I prefer to prime bauxite-liveried vehicles (and red ones too) with white rather than the more obvious red oxide. Somehow the latter seems to dominate a top coat of similar tone, whereas undercoating in white gives it more vibrancy and allows its natural properties to come through. The proprietary bauxite paints are pretty good — unlike the 'wagon greys' — and I used Humbrol here. It captures well that slightly gingery quality of the real thing, but if I were modelling a newly painted vehicle I might want to add just a hint of yellow. On a well-weathered van such as this, though, it hardly matters. I don't know what the preserved lines paint their stock with but it seems, only a few



A comparison of the Connoisseur Models version with one of my best-I-can-do reworkings of the Airfix/Dapol kit, in this case a latter-day air-piped van with hydraulic buffers and roller bearings. Note the replacement panelling. By comparison with the etched kit, the footsteps look clumsy and the ducketts are plainly in the wrong place.

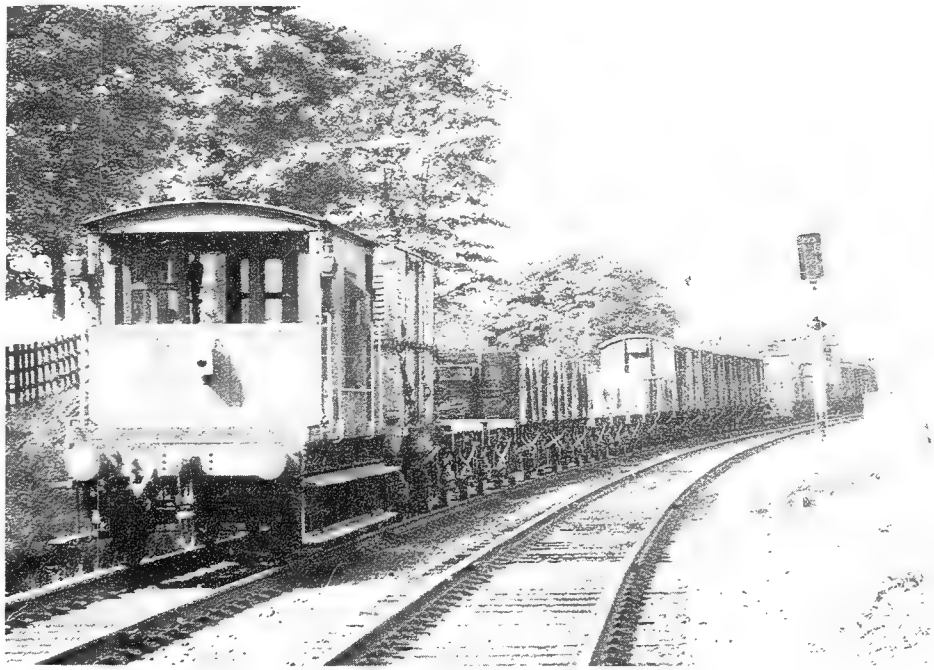
weeks after application, to take on a milky bloom that I certainly don't remember on vehicles in everyday service. I know colour recall is one of the least reliable and most suggestible of our faculties but at the same time it has — like smell — the property of spontaneously triggering all kinds of memories and I think we should got for what works for us, not what the 'livery experts' say. We know the right thing when we see it — or at least we think we do.

Another memory to end with — not, for once, of the prototype, but of a model, Heckmondwike, at the 1976 Easter Show at Central Hall. I'd not done any modelling for years but I just loved the way this railway looked and, more influentially, the way it ran. I welcomed the gaps between trains, the opportunity to look around at the setting, a slice of the old West Riding that I knew so well from childhood, the sense of time passing, the feeling of actually being at the lineside watching. This was how I'd tried to run things on my teenage layouts but watching Heckmondwike in action — or more accurately, inaction — was one of the most educational half-hours I can recall. Good modelling, as has been remarked less often than it ought to have been, is about doing the ordinary things really well, and this layout did them to perfection.

Finally, however, it became obvious that the operating sequence was nearly over. There was an even longer gap than usual between trains and then came a brief exchange of bell signals. A peg went up, then another, followed by a long and pregnant pause. More bells, more silence. This I knew instinctively, would be the grand finale, a 'Jubilee' with twelve on, sweeping majestically past with the down evening express from St Pancras.

Still nothing happened. The wait was so long that I began to wonder if there might be a major fault with the electrics. I was starting to look, once again, at the common-user wagons in the yard when suddenly more bells sounded and, almost apologetically, a 4F shuffled past pushing a brake van.

And that was it — the show was over. I thought the ending was brilliant, the encapsulation of an 'engine and brake' movement I had seen thousands of times on the prototype but rarely, if ever, in a model. As the signals returned to danger, I wanted to applaud but it's not the done thing at exhibitions. Now that I at last have a decent BR brake van with which to recreate it, this is the kind of moment I can come back to again and again.



A BR Standard 20T brake van bringing up the rear of a fitted freight, heading north over the Settle and Carlisle line at Long Preston on 31st August 1967.

The Epsom & Ewell Model Railway Club

Champagne corks popped in January as the Epsom Club celebrated their 50th Anniversary, just one of a series of events to be held by the club during their Golden Jubilee Year.

50 years of railway modelling by the Epsom Club will feature at this year's 'EPSOM SHOW' on 23rd and 24th March, and on display are three layouts which have a long association with the club: The GWR 'Ruxley Branch' (00), first constructed in the early 1960s, is recollected by many from the series of articles published in the *Model Railway Constructor* at that time and its appearances at the Easter show at Central Hall. The layout has subsequently been modifed and extended but still retains many original features, including the mechanical lever frame, and 40 years on still entertains and inspires club members and exhibition attendees alike. 'Leasingthorne' (00), an NER colliery line, was exhibited throughout the 1970s and 80s before being sold to a gentleman in Yorkshire who has kindly agreed to its removal from his loft in order for it to appear at this special showing. Likewise, the new owner of 'Westhill Parkway' (00), four-track mainline in Network South-East days, has consented for the club to exhibit and operate this layout for one last time!

Also being exhibited is the club's new 34ft x 14ft continuous-run P4 layout 'Wadhurst', a model of the ex-SER station on the Tonbridge to Hastings line in Sussex. It's still under construction and, as the club has yet to assemble sufficient stock to represent the intended latter SR years, for this exhibition the layout will be operated with the superb collection of LSWR locomotives and stock from the Scalefour Society's Southampton Area Group layout 'Southwark Bridge'.

Visiting layouts include 'Adavoyle Junction' (P4) – a fascinating mixed gauge Irish railway of the late 1940s, 'Carstairs' (00) – the Deepcar team's layout of this Scottish location in the 1990s, 'Debenham' (0) – bucolic charm of an East Anglian branch line terminus in the 1950s, 'Strove' (EM) – Chris Matthewman's new LNER layout, 'Tebay' (00) – west coast main-line station as modelled by the Shipley MRC and being exhibited for the first time south of the Thames.

For further details see the advertisement in this issue or alternatively log onto ▫ HYPERLINK http://www.eemrc.org.uk ▫ www.eemrc.org.uk ▫ .

Decapod and sound effects

I enjoyed Tim Shackleton's article (MRJ No. 132) on the construction of the South-Eastern Finecast 'Decapod', and endorse all he says about the quality of the kit. It proves just what can be achieved with whitemetal, given a bit of care and attention, and in addition is certainly a value-for-money kit at around £68. Pity that at least two retailers refer to it in their lists as the 'LNER Decapod'!

There are three points which I would add to Tim's comments.

Firstly, the centre coupled wheels were flangeless and, so far as I know, Sharman wheels are not normally available in this condition. Did he get Andrew Cooper to take the flanges off one set? I must admit I cheated by using Alan Gibson's nearest equivalent wheels, and on request he supplied one set flangeless at no extra cost. But even though Alan's wheels are slimmer than Sharman's, the leading pair needed the bosses thinning down – much easier with no moulded-in crankpins. Incidentally, with it being a three-cylinder engine, the crankpins should be set at 120 degrees, not 90, which rules out the use of Romford 'pre-quartered' wheels in OO and EM.

Secondly, to further assist clearance for the leading crankpins, I used cigarette paper for the replacement covers behind the slide bars. Roll-your-own smokers know that Rizla 'Blue' papers are thinner than the 'Red' or 'Green' varieties, and are the ones to use. The trick is to soak the paper in cyano adhesive and let it dry – this makes the paper relatively rigid, and it is only 0.02mm (approximately 0.8 thou) thick.

Thirdly, I was disappointed with the number plates provided in the kit – the shape of the '2' is not correct, and the plates are not 'crisp'. I ordered a special set from Guilplates and these are now a stock item. They are much more accurate and sharply rendered than Finecast's, and well worth the cost.

Next, as may be imagined, the construction of the 'Decapod' was captured by the Stratford Works official photographer. The photographs reveal, among other things, that the inside connecting 'rod', which drove the second axle, was actually a triangular frame passing both above and below the leading axle, which was partially cranked to accommodate the vertical movement of the frame. This cranking of the leading axle, the single cylinder driving the second axle, and two cylinders driving the third, explains why the balance weights on these wheelsets are at what appear to be strange positions. The photographs may be inspected at and copies purchased from the National Railway Museum, York.

Finally, I refer to the letter from Tony Jervis, or that part of it regarding sounds on model railways. Yes it has been heard at British exhibitions, mainly from models of US railroads. And yes, it can be realistic, if done well. But it isn't always done well. And while the general public may be exposed to it for only a few minutes, it can drive you mad if you happen to be operating the layout adjacent to the one that has sound, hearing the same whistle, exhaust, air pump, diesel horn, level crossing bell, or whatever, every fifteen minutes for three whole days! What we need for 'atmosphere' is a good dose of yellow sulphurous 'clag' hovering in a thick and barely-moving layer over the engine shed, or a really solid column of it going feet into the air from a factory chimney, but not the namby-pamby-whispy stuff you get from a Seuthe smoke unit. It can be done – St. Bruno ready-rubbed is a pretty good source, with a resident pipe-smoker hidden under the baseboard, but the 'no smoking' policy at most venues prohibits it, even though at some shows the 'live steam' boys seem to get away with much worse smells, fire hazards and acid rain in the hall caused by their methylated spirit burners.

Allan Sibley
March
Cambridgeshire

Tim Shackleton writes:
The centre wheels are indeed flangeless – I failed to mention this. Also lost somewhere in the second or third level of consciousness was the business of the 120 degree lead on the RH cranks of three-cylinder locos. I may have been distracted by all those two-cylinder BR Standard designs I've been building recently but the more practical reason is that – especially on a ten-coupled loco – I prefer the dimensional assurance of using a GW Models wheel press, which is permanently set at 90 degrees. Allan's method of using pre-sized Rizla Blues is a great idea for achieving rigid but ultra-thin materials; I must get my beloved to change from her preferred Green label papers, which seem to be a good 0.05 thou thicker.

Sound effects

Regarding MRJ No. 132 (page 39) about steam locomotive sound-effects systems, very little has been written about them in the general model railway press, and not much more in model railway electronic circles either. Such systems are not easily constructed at a price acceptable in the UK, though I have heard excellent effects from the US Pacific Fast Mail (PFM) equipment.

For the past 20 years or so I have used the British 'Q Kits' equipment on my 00-gauge layout 'Westport Station' with great success, and it has intrigued viewers at many exhibitions. Its installation is far from simple, however, The locos have onboard loudspeakers, about 12mm diameter, and there are two under-baseboard speakers as well to augment the sound volume. The audio output is fed to the track and to the under-baseboard speakers.

Westport is a terminal station which means that whenever steam sound is heard, it is from a locomotive starting from rest. This requires the 'chuffing' to start off at the same time and the only way I have found to do this (in 4mm scale) is by means of a chuff-rate potentiometer mechanically clutched to the controller spindle and held de-clutched by the operator until he sees the loco start to move off. An additional feature is a rotation sensor on the controller spindle that detects when the controller is turned down for coasting or braking – this action turns the chuffing off automatically. The integrated power and sound-effects controller is a mechanical wonder of my own design and I know of no-one who has done it the same way!

The system has been described in *Model Railways*, November 1985.

I understand that the PFM and Q Kits equipments are no longer in production. If there are more modern and more simply installed steam-sound systems I would love to hear about them.

Michael H. Walshaw
Swanage
Dorset

Slates

Bob Alderman in his article on slate roofing (MRJ No. 131) states that he is unable to determine how a slate size was determined. I have a copy of *Building Construction* by Mitchell circa 1950 in which it states: 'Duchess slates for moderately flat roofs of one fifth pitch; Countess slates for roofs of one-fourth pitch and Ladies for roofs of one third pitch – the practice being the lower the pitch the wider and longer the slate'. (Please note that these figures are the ratio of rise to span.)

Apparently on flatter slopes, water tends to spread at a greater angle under the vertical exposed joint between any two slates in a course and therefore may reach the nail holes of the next course under.

Mitchell also states that the pitch of a roof is governed by climatic conditions as well as the material used. As a rule of thumb, it seems that the milder the climate then the flatter the pitch that can be used.

I would stress that I am neither an architect nor a builder so maybe modellers in these professions may have more comprehensive views.

Bob Haskins
Weston-super-Mare
Somerset

Regarding Bob Alderman's article in MRJ No. 130, a further reference for slate roofing that may be of interest to readers is *The Slate Roof Bible* by Joseph Jenkins (Jenkins Publishing), ISBN 0 9644258-0-7, available from *Amazon.com*. It is a thoroughgoing treatise on slate, the history of its use for roofing, and a practical guide to the construction and maintenance of slate roofs. Although American in origin, the author is well aware (and an admirer) of European slates; indeed, there is a whole chapter on Wales, and the US slate industry was largely developed by Welsh migrants. The author's obvious enthusiasm for his subject permeates the book, and transforms what could have been a rather dry and technical tome into an interesting and informative read. At $35 (I think the UK price was around £27.50) it is rather an expensive book to buy unless you have a special interest in the subject, or own a slate roof, but it is well worth seeing if your local library has, or can get, a copy.

Ken Ricketts
Wokingham
Berks

Wagon brakes

I found Stephen Williams's article, 'Finescale from R-T-R' in MRJ No. 130 interesting, even though I model in O gauge, as some of the techniques he describes could be applied to 'Big-Big' or Lima all-steel wagons. In particular, for Lima the use of inside bearing units overcomes the problems of locating the axle bearings, which as moulded are too low to accommodate the undersized wheels fitted. The additional task of reducing the length by 7mm remains.

The point where I become confused is with the brakes. I have always understood that all ex-MOT wagons had the 'Freighter' brakes (lever-double block both sides), for which BR regrettably perpetuated the LMS term 'double brake'. As for wagons with wooden solebars, paired V hangers were required on steel underframes, with the outer Vs joggled to clear the lower flange of the channel. In the photo of the underside of B38066 (Dia. 1/102) on page 265

paired hangers are shown, but the close-up on page 266 suggests that the outer ones terminate at the bottom of the solebar.

B69190, the fitted wagon, is described as 1/108, but is shown as 1/114 in *An Illustrated History of BR Wagons* (Bartlett et al), which was fitted with vacuum brakes from new. In this case the Morton 4-block rig is shown, and as such would be identical to 1/108 wagons built as Morton 2 block HBO, when converted to vac.

The single V-hanger mounted inside the solebars each side, with connecting cross rod is correct for both HBO and Vac. This assumes that the brake lever/V-hanger on the side not shown includes a reversing clutch connection to the cross rod. Removal of the vac cylinder and the push rods on the non-reversing clutch side produces 1/108 in HBO form. Stephen doesn't mention which brake type is fitted by Bachmann to 1/106. This could have Freighter or Morton 2-block HBO brakes.

On the O gauge wagons I mention, the push rods are moulded in Freighter layout plus a vacuum cylinder, an unworkable combination. The number applied by Lima (B54884) is from 1/104, which had Freighter brakes, but single V-hangers are moulded behind the solebars, the same as for Morton. Since the underframe has to be reduced in length, the brake gear has to go, so this is of no real importance. It does go to show the improvement in R-T-R wagons that has occurred over the past 25 years.

John Greenough
Mornington
Vic. Australia

Chloroform – get rid of it!

Please tell Mike Osborne from me that if he is tired of life, that is his lookout, but if he wants to live long enough to enjoy his grandchildren, then get rid of that chloroform bottle pronto! ('7mm Hoppers' – MRJ No. 131) The ACGIH exposure limit is 10 parts per million in air. Chloroform vapour is obviously anaesthetic, it's also very toxic to the liver and a confirmed carcinogen, teratogen and mutagen! Its use as an anaesthetic has been abandoned for these reasons. It has a heavy vapour which collects in undisturbed air, so that bending down to pick up a dropped component could cause the modeller to be overcome by the fumes unless the work area is well ventilated! There is also the danger of phosgene formation if the solvent is not kept in a cool place and in *brown* bottles. It must never be exposed to sunlight. I hope Mike does not smoke while he is modelling – drawing chloroform vapour through a cigarette is making your own little phosgene gas chamber! Phosgene, COC12, is a deadly poison gas used as such in WW1 and easily formed by oxidation of solvents like chloroform.

I can speak with authority since I am a Chemistry Professor! I worked in industry for nearly 40 years handling all sorts of nasty solvents, but when I had heart surgery a few years ago, the surgeons were worried about my liver, which showed signs of extensive damage. It was not due to booze or a dissolute life (the chance would have been a fine thing) but simply to working carelessly with solvents like chloroform and tetrachlorethane when I was a graduate student back in the early 1960s! Like most young people, in those days I believed I was immortal and that safety precautions did not apply to me! Be warned!

If Mike wants to use a 'tougher' solvent than MEK on his models, let him do what I do and use MIBK, methyl isobutyl ketone. It is a very effective polystyrene solvent but has a strong (and disagreeable) pear-drops smell – but at least you know it's there! Chloroform will deaden your sense of smell until it's too late! MIBK is also toxic but significantly less so than chloroform (the ACGIH limit is 50 ppm) and neither does it have the liver toxicity nor the phosgene hazard.

Dr. Anthony J. East
Madison
New Jersey, USA

Glued track

Having just read the article by J. Douglas Smith, 'Pointwork Components', MRJ No. 131, I would like to endorse his statement 'gluing chairs to wooden sleepers with solvent adhesive is perfectly satisfactory'.

My current EM layout in progress (and has been for some three years now) consists of some thirty plus yards of plain track along with seventeen turnouts, the whole configuration consisting of steel bullhead rail held in C&L plastic chairs glued to EM Society plywood sleepers by means of Daywat/butanone solvent adhesive.

The turnouts have all been manufactured in a similar manner to that described by Andrew Lambert, 'Improved Crossing Vees', MRJ No. 46. The various parts are soldered to brass strip which in turn has been glued to the ply sleepers with superglue. Other than the methods stated, there is not a single brass rivet, soldered pcb joint or anything else holding the rails in place. During the course of building, the tracks have been submitted to a range of stresses including tools laid across them or accidentally dropped onto them as well as the extremes of temperature change common to loft layouts. The whole system remains as firm and solid as the day the first length of track was glued in place.

May I also express my pleasure at the recent articles by Trevor Potts under the title 'Churston Goods', MRJ Nos. 127-129. Whilst I model the LNER exclusively, I still hold his initial layout description, 'Churston', MRJ No. 60 (and in particular the photograph on page 5 of that issue), as the benchmark article which prompted me to scrap my previous garage-based layout and transfer to the somewhat smaller but more secure and warmer climate of the loft, a move which I have had no cause to regret.

Oliver Hatton
Stockton-on-Tees

Cranes

I had originally intended to write a thank you note for that thoughtful editorial in MRJ No. 130, which I suspect echoed the feelings of us all in the wake of September 11th. At such times, the therapy provided by a hobby such as ours does seem particularly rewarding – something about the ability to create and conjure, when otherwise seemingly helpless in the face of such appalling carnage and its inevitable retributions? Thanks, it was nicely said.

To happier matters! It was actually that crane on page 320 of the Christmas issue that had me reaching for the keyboard. I wonder how many other readers of a certain age were particularly stirred by a vague sense of familiarity – apart from a general reaction 'too modern-looking to be North British'? Anyone, I guess, who has been the proud owner of the old Dublo Breakdown Crane – for I believe they are sisters, though not one and the same. So, I clambered into the loft and dug out 'No. 133', my Dublo catalogue of 1962 and sat down with the steam buffs' bible – John S. Brownlie's *Railway Steam Cranes – A Survey of Progress since 1875*, published privately by the author in Glasgow in 1973 and running to 360 pages, illustrated, tabulated and indexed – for £3.

Brownlie's tables II and V (LNER routes; BR Scottish Region respectively) yield the following: The LNER in 1936 ordered two Cowans, Sheldon cranes of 36 ton lifting capacity to inaugurate a replacement programme. As in your photo, they ran on four axles with adjacent *relieving bogies* (the latter were coupled such that they carried some of the crane's weight to keep axle-loadings within limits for secondary lines). Subsequently a batch of six enlarged versions of this design, rated to 45 tons, was ordered 'on behalf of the LNER as part of the re-armament programme' – presumably by the government. They were allocated 'for strategic use'.

The six 1939 cranes had Cowans, Sheldon order numbers 6870-6875; they became LNER Nos. (wait for it . . .): 971,588; 941,599; 901,719; 961,606; 951,515; 941,600. Now, why this freehand-letterer's Armageddon, this Letraset Paradise? Anyone familiar with LNER loco numbering will be hardened to this already – a sage nod, pursing of lips and heavenward roll of the eyes.

Briefly – prior to 1930 the LNER began renumbering all departmental stock with a '7'. In 1938 the 700,000 numbers were commandeered for other departmental stock and replaced by a 900,000 series in which the second digit denoted the area of use as follows:

900 – North Eastern Area
940 – GN Section, Southern Area
950 – GC Section, Southern Area
960 – GE Section, Southern Area
970 – Southern Scottish Area
980 – Northern Scottish Area

The third digit denoted the operating department thus:

0 – civil engineer
1 – locomotive department
2 – workshops
3 – stores

For loco department cranes, breakdown cranes were further distinguished by the fourth digit, generally a '5' or '6'.

Re-examining the LNER crane numbers for the 1939 batch again, they now make more sense(?) as being: 'six loco dept. cranes, specifically for breakdown use, allocated to: Southern Scottish, GN Section, NE Area, GC Section, and GM Section, respectively'. Right, and the two GN Section cranes have consecutive numbers, you see.

Where were we? – ah, Eastfield; with one eye on that Southern Scottish allocation, we dip into Brownlie again. He tells us that in 1939, crane 971,588 (order 6870, cost £9,482) went first to Thornton, on the East Coast Route in the midst of the Fife coalfield. It replaced a sixty year old crane, but itself proved too much of a good thing in an area of lines afflicted by colliery subsidence; thus in 1940 it moved to Eastfield in a direct exchange for the ex-NER crane there. Brownlie records it as allocated there in 1948 upon the formation of BR, and in fact provides an undated illustration of it working on PW duties, renumbered RS 1058 and with wasp stripes at the boiler end.

The crane would seem to have still been at Eastfield by 1973 when the book was published; Brownlie's tables give other transfers and withdrawals up to 1969. Ironically, Simon Fountain, founder member of the erstwhile Glasgow Group of the Scalefour Society which I joined in 1982, worked on the Eastfield Breakdown Crane team before moving to Derby – are you out there Simon? The depot itself closed in 1992. Presumably someone will tell us if/where the crane is preserved – all I can say is that it was not on the Strathspey stocklist for 1994.

Now, the Dublo connection – let's go back to the other five 1939 cranes. They were numbered and allocated thus: 941,599 to New England (Peterborough, not USA); 901,719 to Darlington; 961,606 to Cambridge (Cambs. not

Mass.); 951,515 to Gorton (Lancs. not Rannoch Moor); 941,600 to Kings Cross (not King Cross . . . GN though that be). That's where they also were in 1948 when inherited by BR; though, joking apart, the last two had travelled widely in the interim. (I am not sure from Brownlie whether they *did* return to BR in 1948, or remained with their new owners.) Remember the 'ordered on behalf of LNER' bit earlier? Well, in 1941 the paymasters requisitioned them for the War Department. Gone west, as far as the LNER was concerned, they were converted to oil firing and sent east – to Iraq in the case of the Gorton crane, which was thus re-united with its be-khaki'd former driver Topping. So, did these two remain in WD employ? Brownlie is silent on any BR renumbering or subsequent moves.

Inevitable re-numbering by BR brings us, neatly, to the Cambridge crane. We have seen that two cranes, via WD, apparently did not receive BR numbers, and Eastfield's became RS 1058. This stemmed from BR perpetuating, in Scotland and the LMR lines, an LMS scheme of 1941 which designated as RM or RS, those manual or steam cranes suitable for running in trains – as opposed to e.g. portable yard cranes. The three remaining LNER 1939 cranes fell under an English regional code thus: GN section 100+; GC section 120+; GE section 130+; NE Section 150+. Hence there became No. 110 at New England, No. 156 at Darlington and . . . (cue trumpet fanfare) No. 133 at Cambridge, subsequently immortalised by Binns Road in the Hornby Dublo catalogue and surviving today in (how many?) countless lofts, glass cabinets or working still on layouts. I've never seen an article or photo of a conversion that I can recall.

None of the six had been withdrawn by 1973, seemingly. Cambridge held on to 133 while the other two moved as follows:

110 – New England to March, 1967
156 – Darlington to Thornaby, 1965

Steve Duckworth
Crosspool
Sheffield

The photograph from the R. S. Carpenter collection reproduced on page 320 of MRJ No. 131 shows LNER 45 ton Cowans Sheldon steam breakdown crane No. 971588, built in 1939 by Cowans Sheldon & Co. Ltd. of Carlisle as Works No. 6870. It was subsequently renumbered by BR as RS1058/45 in the Scottish Region's extension of the LMS 1941 lists and later No. ADRC 95220. It was initially allocated to Thornton Jct in January 1940, but spent from at least October 1942 to 1st October 1983 at Eastfield. It was therefore never a North British crane. Following its conversion to diesel propulsion at Derby Locomotive Works during 1984/5, it was renumbered again as ADRC 96717, and was then at Motherwell between at least April 1988 and February 1991, sometime after which it was transferred to the Electrification Dept. It was withdrawn in December 1993 and scrapped at Ashford (Kent) by Coopers Metals.

My print of the photograph, from the A. G. Ellis collection No. 7310, states that it was taken on 6th April 1952 and the lining on the jib sides suggests it is still in LNER livery. Those readers who wish to learn more about this crane, its LNER sisters and WD brothers, three of which survive to this day, are referred to *Backtrack Special Issue No. 2 – The London & North Eastern Railway*, just published by Atlantic Publications. ISBN 1 902827 04 X, price £14.99. This includes a comprehensive article on these cranes and their 36/35 ton predecessors, together with livery details and explains the probable origins of the Hornby Dublo die-cast steam breakdown crane introduced in 1960.

Peter Tatlow
Godalming
Surrey

BOOK REVIEW

A GUIDE TO THE BOWES RAILWAY

by John Elliott. Chilton Ironworks. £6.00. ISBN 0 9523672 6 2.

Another great ideas book from the same kit manufacturer-turned-publisher. The Bowes Railway in County Durham used a mixture of rope inclines and locomotives to move coal around and this handsome book gives a useful insight into how it all worked. The illustrations, mostly in colour, focus on buildings, wagon stock and engines in that order, and this large-format softcover is a useful adjunct to Colin Mountford's more detailed historical study, published by the Industrial Railway Society in 1966.

As the various Cromford & High Peak layouts have shown, models of rope-worked inclines are always an exhibition show-stopper and the Bowes Railway had the most extensive network in the country. Thrilled by archive film of the system in its final days, your reviewer and his infant son once whiled away a winter's afternoon by modelling it in Lego. It would be nice to think John Elliott's book might inspire someone to recreate this most fascinating of industrial railways in a more finescale format, especially since the essential parts of the system have been preserved in working order and can readily be visited. The Queen Mother, apparently, was once hauled along its length in an open wagon – an exhibition talking point if ever there was one, assuming scale drawings of Her Majesty could be obtained. Again, there are a few typographical niggles but the book is well researched and offers excellent value.

Chilton Ironworks are at 23 Atherton Drive, Chilton Moor, Houghton-le-Spring, Tyne & Wear, DH4 6TA. Add £1.50 postage per order.

Real atmosphere at Preston in 1967. TIM SHACKLETON

DIARY

FEBRUARY

23/24 **Solent Model Railway Group** Eurotrack 2002 exhibition at Fleming Park Leisure Centre, Passfield Avenue, Eastleigh, near Southampton, Hampshire. 10.00 – 5.30 (Sat), 9.30 – 5.00 (Sun). £4.00/£2.50/£2.00/£10.50.

23/24 **New Mills & District Railway Modellers** exhibition at Chapel-en-le-Frith High School, Long Lane, Chapel-en-le-Frith, High Peak, Derbyshire. 10.00 – 6.00 (5.00 Sun). £3.00/£1.50/£8.00.

MARCH

2 **South Hants Model Railway Club** exhibition at Admiral Lord Nelson School, Dundas Lane, Ocean Park, Portsmouth, Hants. 10.30 – 5.00. £3.00/£2.00/£1.50/£6.00.

2 **International Model Railway Show** at Moat House Hotel, Silver Street (Town centre), Northampton. 10.00 – 5.00. £3.00/£2.00/£9.00.

2/3 **Romsey and District Railway Modellers Society** exhibition at Crosfield Hall, Broadwater Road, Romsey (between the Town Centre and the by-pass). 10.30 – 5.00 (Sat), 10.00 – 4.30 (Sun). £2.00/£1.00/£5.00.

9 **Chesham Model Railway Club** exhibition at the Elgiva Theatre, Chesham, Bucks. 10.00 – 5.00. £2.50/£1.50/£7.00.

9 **Beckenham and West Wickham Model Railway Club** exhibition at Annerley Town Hall, Annerley, London SE20. No times advised. £2.00/£1.00.

9/10 **Birtley Model Railway Engineers** exhibition at Community Centre, Ravensworth Road, Birtley, Tyne and Wear. 10.30 – 5.00. £2.00/£1.00.

16 **Abingdon & District Model Railway Club** exhibition at The Guildhall, Abingdon, Oxon. 10.00 – 5.00. £2.50/£1.30/£6.50.

16 **North Downs Model Railway Circle & 1:87 Scale Society** exhibition and Expo 1:87 at St. Peters Church Hall, Chipstead Way, Woodmansterne, Surrey. 10.00 – 5.00. £3.00/£1.50/£2.00.

16/17 **Stockport & District Railway Modellers** exhibition at Stockport Grammar School, Buxton Road (A6), Stockport. 10.00 – 5.00. £2.50/£1.50/£7.00.

16/17 **Nottingham (Bulwell) Model Railway Society** East Midlands Model Railway Exhibition at Harvey Hadden Sports Centre, Bilborough Park, Wigman Road, Bilborough, Nottingham. 9.30 – 6.00 (5.00 Sun). £5.00/£2.00/£3.00/£12.00.

17 **The Talyllyn Railway Preservation Society Wessex Area Group** model railway exhibition at Ferneham Hall, Osborne Road, Fareham, Hants. 10.00 – 4.30. £2.50/£1.50/£7.00.

17 **6695 Locomotive Group** Model Railway 'Funday' at the Merley Community Centre, Harrier Drive, Merley, Wimborne, Dorset. 11.00 – 4.30. £1.50/£1.00/accompanied children under 16 Free.

23 **Tring & District Model Railway Club** Open Day at The Red Cross Hall, Town Centre, Tring, Herts. 10.30 – 5.00. £1.50/70p/£3.50.

23 **Bristol East Model Railway Club** exhibition at St. Luke's Church Hall, Barton Hill, Bristol. 10.00 – 5.00. £2.50/£1.00/£2.00.

23/24 **The London Festival of Railway Modelling** at Alexandra Palace. 10.00 – 6.00 (5.00 Sun). £8.50/£7.50/£4.50/£23.00.

23/24 **Scalefour North 2002** at Thornes Park Centre of Wakefield College, Wakefield, Yorkshire. 10.00 – 6.00 (4.00 Sun). £2.50 for Scalefour Society members and £3.50 for non-members. Partners admitted free.

30 **Ilfracombe Model Railway Society** exhibition at the Landmark Pavilion, Wilder Road, Ilfracombe. 10.00 – 5.00. £5.00/£2.50/1.00.

APRIL

6 **Tavistock Railway Circle** exhibition at Tavistock Town Hall. 10.00 – 5.00. £1.80/£1.00/£4.00.

6 **The Class 47 Locomotive Society** Croydon Transfair 2002 at St. Peter's Hall, Ledbury Road, Croydon, Surrey. 11.00 – 4.00. £1.00/50p.

6/7 **Crawley Model Railway Society** exhibition at Tanbridge House School, Guildford Road, Horsham, West Sussex. 10.00 – 5.00 (4.30 Sun). £3.50/£1.75/£8.75.

13/14 **Salisbury & S. Wilts Railway Society** exhibition at Michael Herbert Hall, South Street, Wilton, Salisbury, Wilts. 10.30 – 4.30 (Sat), 10.00 – 4.00 (Sun). £3.00/£2.00/£8.00.

14 **Gloucester O Gauge Group** open day at Hardwicke Village Hall, Green Lane, Hardwicke, Gloucester. 11.00 – 5.00. £1.50.

14 **Winchester Gauge 'O' Guild** exhibition at Kings School, Romsey Road, Winchester. 10.30 – 4.30. Admission prices not advised.

HISTORICAL MODEL RAILWAY SOCIETY
Meetings for March 2002

London Area: 4th March. 6.30 p.m. at the Model Railway Club, Keen House, Calshot Street, London N1. Area Group Meeting, subject to be announced.

North-West Area: 7th March. 8.00 p.m. at ESWA Club, Park Road South, Birkenhead. 'Coach Restoration' by Mike Williams.

East Midlands Area: 13th March. 7.30 p.m. at the William IV, Sutton Road, Mansfield. Visit to layout of A. Moore.

Sussex Area: 14th March. 7.15 p.m. at London Road Station, Shaftesbury Place, Brighton. 'Wisbech and Upwell Tramway, prototype and model' by Dave Cox.

Scottish Area: 16th March. 2.00 p.m. at the Low Port Centre, Linlithgow, West Lothian. Area Group Meeting, subject to be announced.

Essex Area: 22nd March. 7.45 p.m. at St. Mary's Church Centre, Great Baddow, near Chelmsford. Area Group Meeting, subject to be announced.

Bristol Area: 23rd March. 2.00 p.m. at the Wansdyke Room, Saltford Hall, Saltford, near Bristol. HMRS Annual General Meeting.

East Lancashire/North Manchester Area: 26th March. 7.00 p.m. at Old White Lion Hotel first floor function room, 6 Bolton Street, Bury. 'Tempsford, The Anatomy of a Station' by Peter Hall.

Bedford Area: 27th March. 7.30 p.m. at Addison Centre, Kempston, Bedford. 'Glues' by Henkel Loctite.

OBITUARY
K. C. WOODHEAD

I regret to report the passing in October last of Ken Woodhead, aged 88. Ken was born in Mexborough, Yorkshire, and was an engineer by profession. He became well known for his finescale drawings of engines and carriages published in many magazines and accompanying articles in several books.

Ken produced superb engines in 7mm scale, making almost every part himself, including some of the finest patterns that I have ever seen.

His love of railways had no boundaries and he belonged to almost all of the railway societies in England. His own railway could be changed from the LNWR to Midland or to the GN by swapping the signal, buildings and, of course, the rolling stock, so that visits to Ken's home in Norfolk always had a surprise in store. I am sure that had he retained his eyesight, the GWR would have followed.

Ken Woodhead was truly a gentleman and will be missed greatly by his many friends. My condolences to Peggy and to Rupert. Another chapter has closed.

Bill Davis

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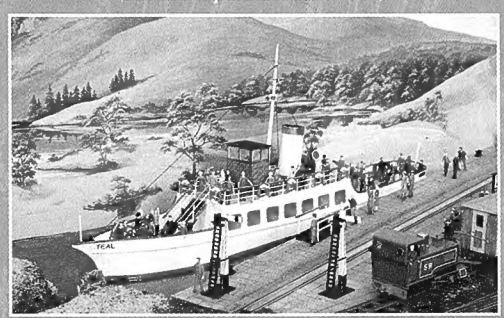

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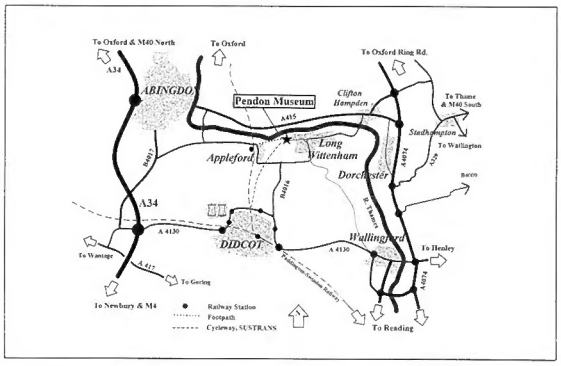

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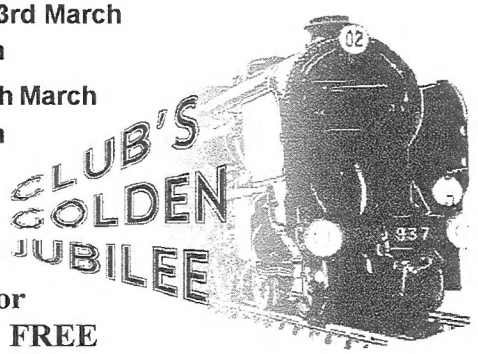

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Gauge '1' £78.50 (£61.25) plus £1.50 P&P

SM 5 pole Motor/Gearbox(Ratio 25:1)/Flywheel
- Price £38.00 (£29.75) plus £1.00 P&P

JH 5 pole Motor/Gearbox/Flywheel
Standard 25:1 Gearbox/Flywheel
- *Temporarily unavailable*
Double Reduction Gearbox(Ratios 25:1, 33:1)/Flywheel
- Price £71.00 (£55.50) plus £1.50 P&P

Fulgarex Slow Action Point Motor
- Price £8.95 plus £0.75 P&P

Prices in brackets are for GOG & GIMRA members. For free product lists or a quotation for any 7mm or 10mm 'RTR' model please send a large SAE to the address below or call **Tel. 020 8398 2415**

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WHEN IT'S DETAIL THAT COUNTS

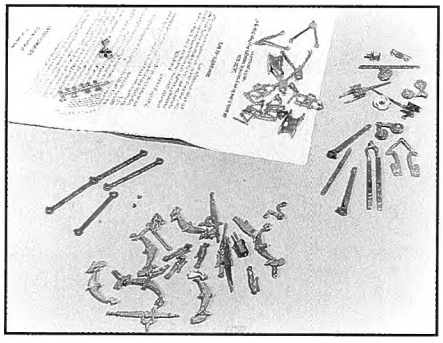
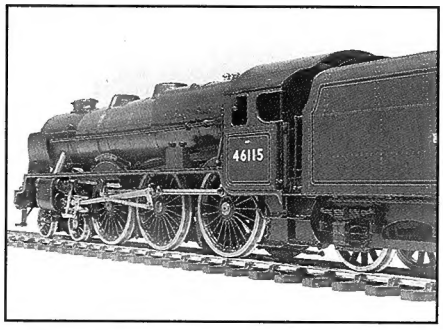


Photo 1



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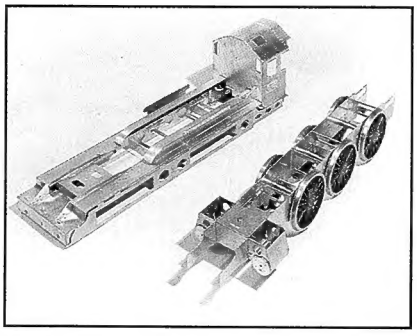

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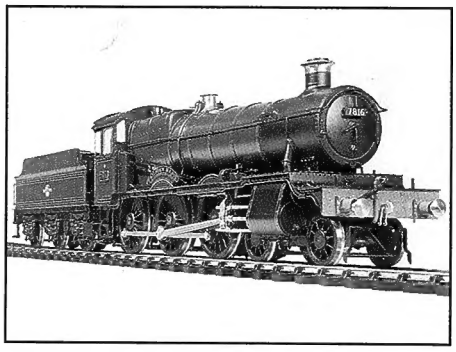

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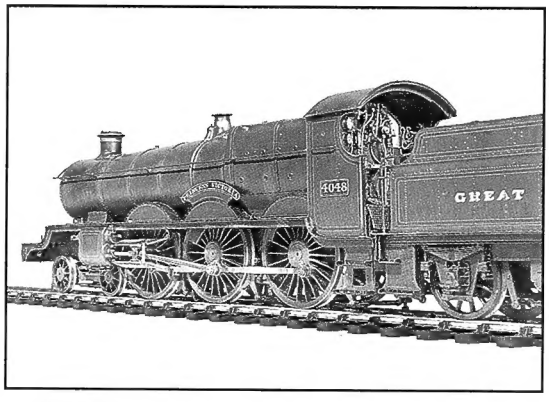

Photo 5

Photo 1 – 45XX Super Detailing Kit PWM6S
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Photo 2 – Chowbent Royal Scot PWCL18 – Tender PWCL30
Photo 3 – Mitchell County 4–6–0 PWM21 Test Etch
Photo 4 – Mitchell Manor PWM5 – Tender PWM18
Photo 5 – Mitchell Star PWM1 – Tender PWM18
Photo 6 – Mitchell Castle PWM3 – Tender PWM18

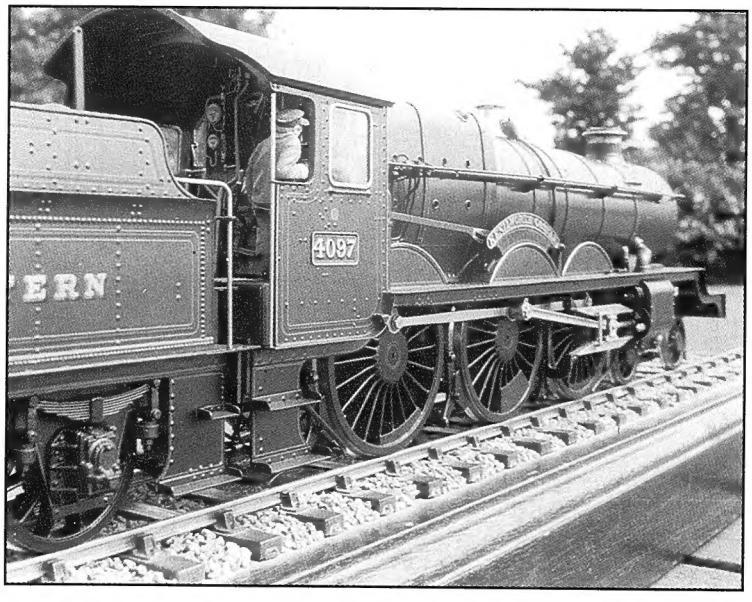

Photo 6

COMING SOON – Chowbent Royal Scot, GWR 4–6–0 County and in June – 3 Saints (Scott/Lady/Saint).

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